PRACTICAL WINERY

THE WINEMAKING REVIEW

MAY–JUNE 1983

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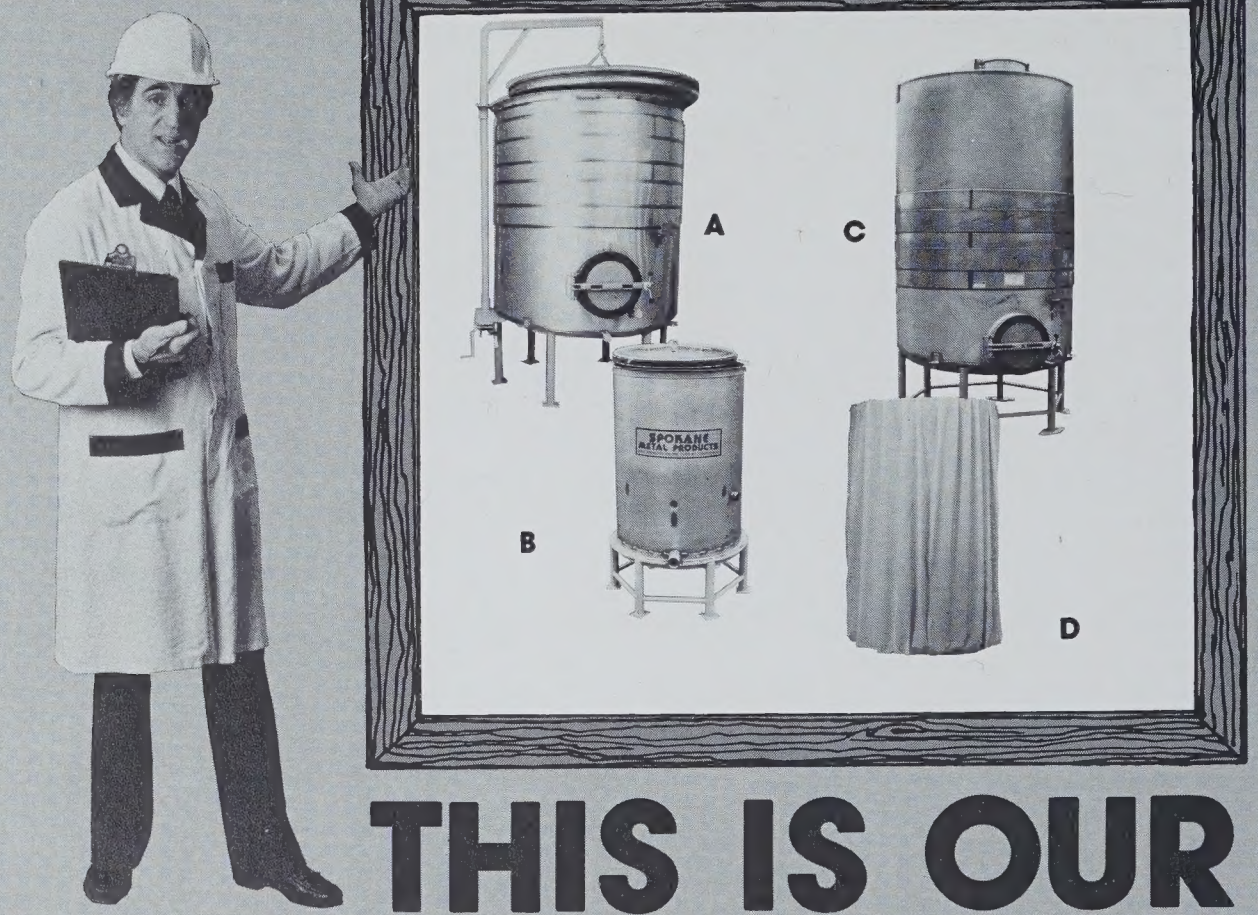

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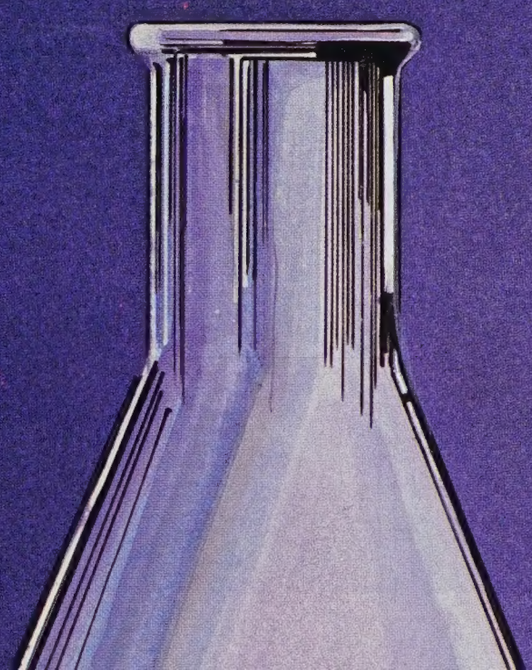

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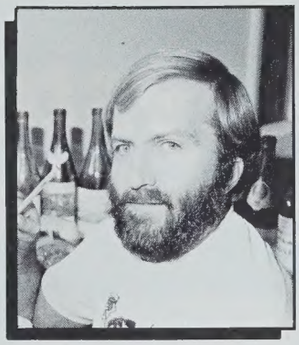
This edition begins the fourth year of **PRACTICAL WINERY**! We have received input from many sources to improve the publication. We have implemented changes and hope these meet with your approval. Your comments are welcome.



For the Chardonnay story herein, begun last September, one of us personally interviewed each winemaker in the story. This is our most ambitious varietal analysis to date and represents many miles, and many, many hours! An in-depth look at Gewurztraminer is almost done with Carbonic Maceration right behind and California Pinot Noir not far off.

FREE RUN

In this issue, we begin a purchasing guide for filtration equipment and media with Part I giving information specific to plate and frame filters and the media used with these filters. In following issues, we will continue with Parts II and III of this guide offering similar information for pressure leaf and membrane filter equipment and media.

Some 135 companies are scheduled to exhibit at the annual meeting of the American Society of Enologists in Reno, Nevada, June 20-23, and a tremendous amount of information will be available! Our two-page A.S.E. exhibit guide should help participants cover the floor efficiently, and give readers, unable to attend, enough of a lead to determine which exhibitors to contact for more information.

I want to strongly recommend participation in the A.S.E. Technical Projects Workshop on Stability Testing and Fining, scheduled for six hours on Sunday, June 19. Workshop leaders include Roger Boulton, U.C. Davis; Bob Dowrie, Almaden; Phil Franscioni, Paul Masson; Buddy Masuda, Paul Masson; Bruce Rector, consultant; Peter Stern, consultant; and Jim Vahl, consultant. There is room for only the first 30 registrants at $20.00. I hope demand overwhelms the Technical Projects Committee, and they see the need to offer more of the same workshops in the future!

I want to commend the American Society of Enologists for selection of Brad Webb to receive their Merit Award this year. Webb has certainly made valuable contributions to many wineries during his career.

Don Neel

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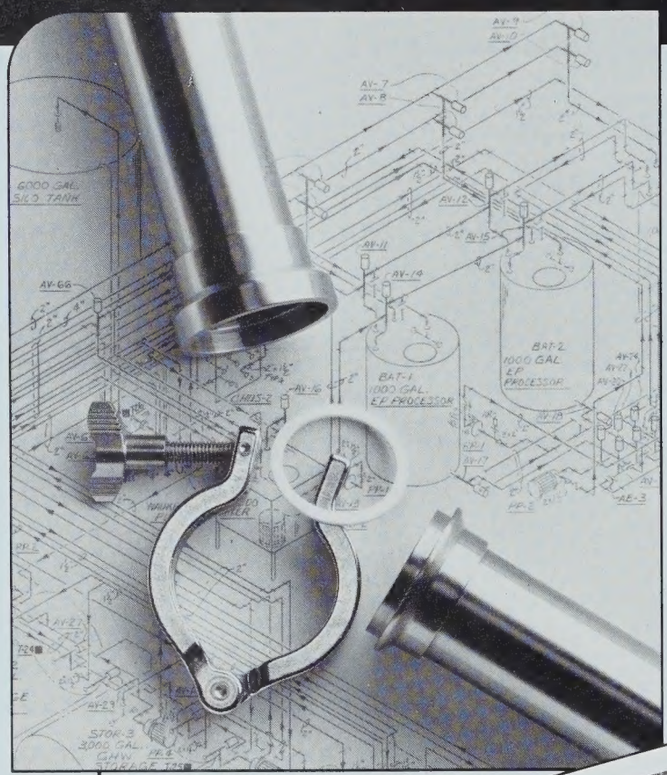

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Quick and easy-to-remove guide to vendors for A.S.E. Participants

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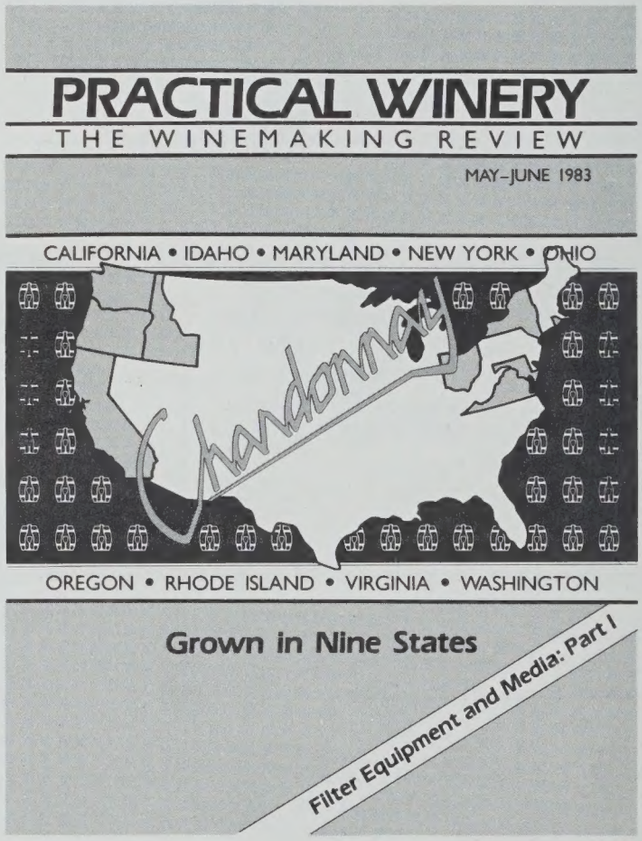
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LETTERS TO THE EDITOR

Dear Editor:

The letter by Arthur J. Hunt, Liquid Extraction Systems, in your March/April issue prompts the following thoughts:

It is indeed a sad fact that there is hardly any U.S.-made winery equipment available, particularly for the small and medium-sized winery.

For example, the U.S. bottling equipment industry, with the notable exception of a few companies, such as Horix and McBrady, has neglected the special needs of U.S. wineries and Champagne producers, concentrating instead on the more lucrative and better established soft drink and beer markets.

Enotech represents several European manufacturers of wine and Champagne machinery, and we would certainly welcome the opportunity to also handle U.S.-made equipment.

However, we are simply forced to go to overseas sources due to the lack of specialized winery equipment and/or innovative technology in this country.

Winemaking has evolved into a highly competitive industry, not only due to imported wines, but also due to the dramatic growth among domestic producers. To succeed in this increasingly competitive market, the entire winemaking and bottling process will also have to be more efficient and cost effective, and wineries will only buy equipment which serves their needs, regardless of whether U.S. or foreign made.

I think it is also only fair to give due credit to the important contribution European equipment manufacturers have made to the U.S. wine and Champagne industry and, no doubt, will continue to make in the future.

R.Peter Klipstas
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? Questions and Opinions Wanted

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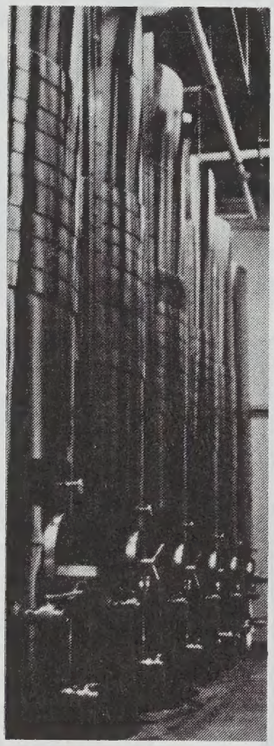

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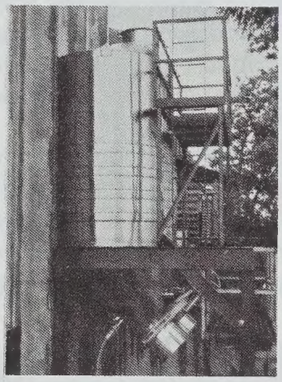

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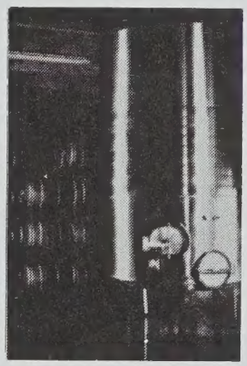

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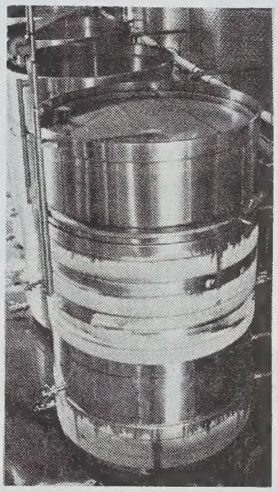

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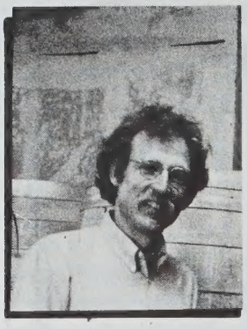

Q's & A's
Quality Approach

By BRUCE RECTOR
Consulting Enologist

Q. *Our winery has only large tanks and very few small containers. Is it really that deleterious to the wine to have it blanketed with gas?*

A: Remember, the thrust of this column is to obtain the highest quality wine possible, but at the same time I understand the compromising situation. In some respects, blanketing is not that damaging to the wine, especially in terms of oxidation.

If a tank is properly purged prior to filling, the wine can be held with very little oxygen pick-up. The real danger of the low tank or barrel is a microbial one. It is the interface of gas to liquid that creates the niche where spoilage organisms thrive.

We know from the scientific treatment of ecology 'where there is a niche, a niche will be filled', a biological variation on 'nature abhors vacuums'. By topping up a container you have substituted a solid phase (the top of the tank) for the gas phase and eliminated the environment where spoilage organisms do best.

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Please do not misunderstand that I think purging is bad or wasteful. It is a good idea to use it even when filling a container to the brim and certainly in the partial case.

Q. *What is the best way to gas a tank?*

A: Before you fill it! You should take advantage of the physical removal of oxygen from a tank rather than relying on the molecular weight of a 'blanketing' molecule of gas. This means that the best chance you have of removing oxygen is to introduce a cold gas to the bottom of the tank and to let that layer, because of its coldness, push the oxygen out the open manway at the top.

Luckily, we do not have to ice down the gas cylinders to get cold gas; the gas law takes care of that for us. As the volume of the compressed gas expands, it gets colder, producing the thermocline we need to push the oxygen out the top.

When initially purging a tank prior to filling, use a narrow I.D. hose to keep the gas 'compressed'. Keep the end of the hose stationary and at the bottom of the tank. Putting the hose in at the bottom drain port will usually take care of this.

Dispense the gas at a high rate and without a regulator. Regulators tend to freeze up and are a heat sink for the gas that you want in the tank as cold as possible.

A rule of thumb is you want three times the volume of gas as the volume of the tank. The way to verify that the oxygen has been removed is best accomplished with an oxygen meter or the econo-model, a wooden match.

At the top manway, lower a flaming match down into the tank. What you are looking for here is not when the flame goes out but when the lack of oxygen extinguishes the glowing ember. After this is accomplished, close the manway and vent the tank prior to filling.

Q. *I have purchased a few new French barrels. How can I tell which lot of wine will benefit the most in the new barrels?*

A: First define the wine style for each of your lots. Do you want the Chardonnay to have the 'warm round flavors of Burgundian cooperage' or an understatement of oak? How 'fume' do you want your Sauvignon Blanc to be?

By smelling the new barrel, you can predict the character. If the barrels have been stored with SO_2, blow it out with compressed air. Your nose will tell you how smokey the character is going to be and whether your French barrels may seem more like American Oak.

Your past experience with a particular cooperage firm may help but should not be relied upon. The toast level in a barrel does a lot to determine flavor and this varies within a cooperage depending on how hard the wood was to bend and how much they swab down the barrel during the bending.

Another effective way to predetermine the suitability is to take a gallon of each lot and put it into the new barrel. Roll it around for a minute and draw off a sample; continue the rolling and draw off another sample five and twenty minutes later.

This series will show you the character and intensity and guide you on which lot should go in first and how long it should stay there.

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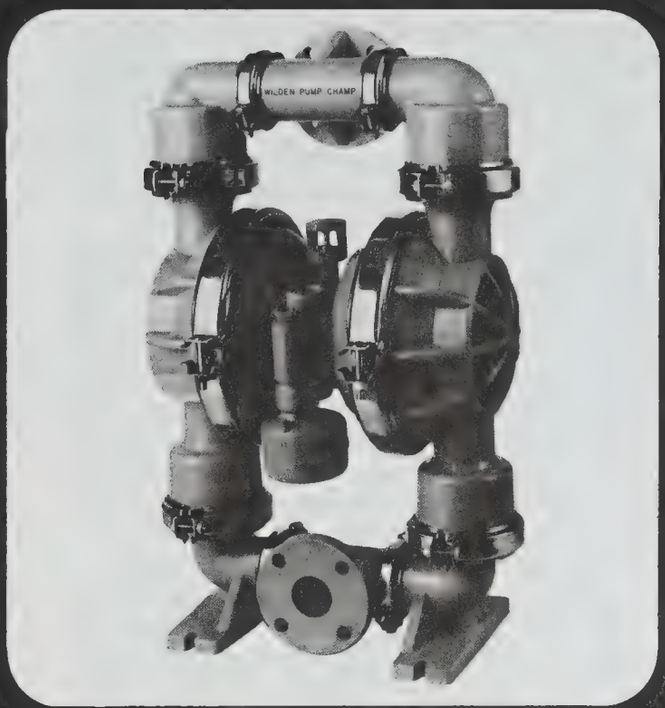

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Circle No. 7 on Reader Service Card

MUST TO MARKET

What's in a Face?

By PAT DORE

In a recent **San Francisco Chronicle** article, Larry Walker wrote about a new brand of French wine being launched by Cross and Blackwell (C & B) called: 'French Rabbit'. I have yet to see the brand in a retail store, but I have seen a full color ad in a trade magazine.

I am certainly not a proponent of French wine, nor do I have stock in C & B, but this product illustrates well-conceived label design and proprietary name. Let's concentrate on the label and the name.

By using a proprietary name, C & B has entered into the business of high risk/high reward. C & B has designated the 'French Rabbit' as both the brand name and the proprietary name for this wine.

By making this decision, C & B chose not to position this product as part of a brand family extension, already in distribution, but rather an item that stands alone. An example is Paul Masson (brand) and Emerald Riesling (proprietary name); Masson opted for a proprietary name, but wanted it as part of a line extension.

By heavily investing a lot of bucks behind a 'catchy' name, C & B hopes to hit pay dirt with a winner, creating another Lancers or Blue Nun. They would be the sole owner, with no competition, and have a consumer who will go to a favorite wine shop demanding 'His or Her Rabbit'. That's pretty harey in a very nice way.

Of course, when one reaches the pinnacle of success (you can bet within months) there will undoubtedly appear in the marketplace such names as French Bunny, Monsieur Rabbit, Bugs Burgundy, Daffy Duck (if it's sparkling), Bridgette La Bunny, etc., etc.

If it does not catch on, the brass at C & B will see that their Porky Pig product manager was always a little Goofy now that his Mickey Mouse project lost hundreds of thousands of dollars. The word will circulate to 'Beam him out, Scotty', and the gamble will be lost.

The point I want to make is that any winery, regardless of size, can develop a proprietary category under an established brand umbrella at a very low risk.

Heed caution, take a very small step forward in terms of the number of cases to bottle and target only a few markets which are easy to read; easy to read in that the winery can analyze a limited number of high volume accounts by keeping in contact to track how the item is doing. If successful, you have the beginnings of a solid, saleable program that can be rolled out into other markets.

We must all be aware that we are in a marvelous industry where the consumer has **no established brand loyalties**. I can't emphasize that point enough! How would you like to compete with Crest toothpaste, Tide detergent or Campbell soup?

Returning to our discusssion of the rabbit label design, I like it! It's clean, contemporary, and almost like the cover of **Playboy** magazine; you have to look twice to see the rabbit! What I like most about it is that it's uniquely different in that it is not your traditional worn out vineyard scene.

We can all take a lesson, and lest we not forget that by itself we may think a label looks attractive: put it on the shelf against 25 other labels to see how we fair!

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A.S.E. Booth 117 **Circle No. 8 on Reader Service Card**

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Case in point: a gentleman contacted me exploring the possibility of having my marketing company represent him in the marketplace. I asked to see samples of his product and his price list.

I opened the styrofoam six-bottle container (Samsonite baggage is cheaper to use) late in the evening to look and taste, and Holy Cow! You wouldn't believe the labels on the bottles, not to mention short foils which gave the impression that the bottles were not quite full! (tacky-tacky) The wine was very nice-not great-just very nice.

Having nothing to lose, I called the gentleman and candidly informed him that his labels looked like they were designed by Parker Brothers with help from Toys-R-Us. He immediately responded that folks who come to the the winery, often comment on how much they like the labels.

I countered by saying that folks who come to the winery have a) nothing to compare the labels to, b) don't want to offend Dr. Frankenstein nose to nose, c) have no sense of humor and don't belong in a winery, and d) want to leave fast without a confrontation because their six-year-old just released the handbrake of their 28-foot motor home.

Seriously, take a look at what people do who rely on packaging to sell product. When you have the time, go to Macy's department store and spend time in the perfume section studying packaging. Then walk to the cosmetic department and wander over to toiletries (that word always bothers me).

Really study seriously, asking yourself, "What are they trying to create?" and "What do they want the consumer to think?" Study lines, print type, color coordination, embossing, foiling, package shape, etc., etc.

After that stint, take a walk through the wine section of a large shop and look at your competitors' labels, studying and asking the same questions you did at Macy's. Take your own bottle, if not in the shop, and compare it to your competition.

Remember: packaging is so critical, it has to make the consumer **want** to pick up and hold the bottle.

Finally, let's talk about overkill and underkill.

I won't mention names, but there is a Napa winery which hung eighteen whistles and bells on its label, used eight corks, and did enough foiling to sink the aircraft carrier, Coral Sea. Seeing that label with so much confusion and activity, a consumer will pass it by out of fear and frustration. Overkill.

Another Napa winery (I am not picking on Napa!) has a stark white label with very faint grey print and very little of anything else. It has the appearance of being left in the back window of a camper in the desert for three weeks. Ho hum, underkill. If you ever get into a party situation, (rare in the wine business these days) take six leading brands of wine in your price category, put them on a table, and cover them with a box or bag. It makes little difference where you position the brands.

Tell the group you are going to give them one brief look at the bottles and for them to tell you what they remembered seeing. Have the group view the bottles at a distance of eight feet or greater. Have them in a standing or sitting position or prone (if it's a real good party!) Draw your own conclusions, but one brand will probably be outstanding. WHY?

Pat Dore is President of Coastal Wines, Ltd., 307A Bridgeway, Sausalito, CA 94965.

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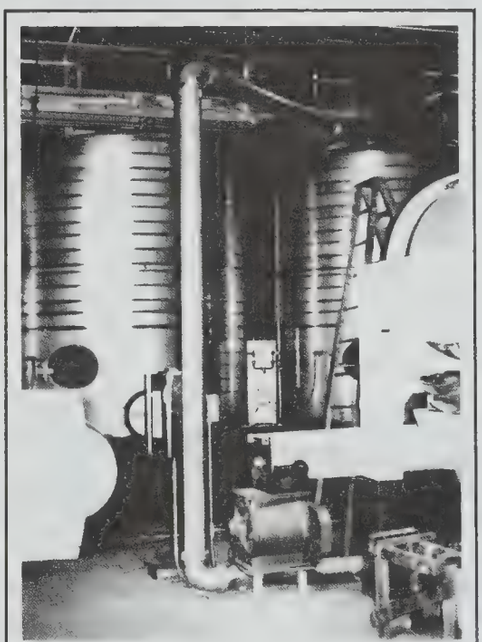

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A.S.E. Booths 30-31 Circle No. 9 on Reader Service Card

Whole Cluster Pressing of White Grapes

By DENIS KELLY

A lot of changes have occurred lately at Concannon Vineyards in Livermore Valley, CA. They are celebrating their 100th Anniversary this Spring and have a new label, new owners, and what seems to be a new style of winemaking instituted by Sergio Traverso who took up duties as winemaker for the 1981 crush.

Traverso, who holds a doctorate in microbiology from U.C. Davis, came to Concannon from Sterling; prior to Sterling, he was winemaker at Domaine Chandon.

One striking new departure in winemaking for the winery is Traverso's practice of whole cluster pressing for white wines. The grapes are hand picked into fruit bins and gondolas and loaded directly into the tank press. No crushing or separation of stems from the grapes occurs. This change from conventional California practice for white grapes led me to ask him about the results.

According to Traverso, the technique of pressing whole uncrushed berries without separating them from the stems is common in many winemaking areas. In Champagne, of course, it is standard practice to press both white and red grapes uncrushed and the technique is used in many premier cru Bordeaux vineyards for whites.

Traverso used the method at Domaine Chandon, following usual Champagne procedures, and would have used it at Sterling if conditions had permitted. At Sterling, the only way to get grapes to the press was by crushing and using a must pump.

Traverso feels that whole cluster pressing has one very definite advantage over conventional handling of whites: lower pressure is needed to extract the juice. This has a real effect on the style of the resultant wine, producing a lighter, more delicate white.

One of practical advantages of the technique is the ability to press difficult, slippery skinned grapes like Semillon. Rather than use rice hulls to build a press cake or pectinase to break down the cellular structure of the skins, Traverso prefers to use whole clusters with the stems insuring efficient and improved draining and pressing of the grapes.

From a stylistic point of view, lack of skin contact is a definite plus for Traverso, especially with strongly flavored varieties like Sauvignon Blanc, a Livermore Valley specialty.

"My style of winemaking emphasizes the more delicate aromas of the grape," he says. "Skin contact releases more aroma, but coarser, undesirable components come through also."

Grapes have to be hand picked, obviously, as machine harvested grapes lack the stems needed for efficient pressing. Traverso sees little difference in pressing grapes picked in vineyards that surround the winery from those purchased from vineyards in other areas.

"As long as we have a careful grower who picks in the cool of the day and delivers the grapes immediately, we have no problem," he adds.

Traverso feels that the whole cluster method works best with a bladder press. At Concannon, he uses a Bucher 100 RPM tank press that is rated for a charge of 20 tons. With whole clusters, Traverso says the average is closer to 12 tons per batch.

"I wouldn't use any other type of press here," says Traverso. "The bladder press insures complete control and a gentle pressure. Also with this press, there is no chance of macerating the stems and releasing bitter compounds into the must.

"Most juice is free run and is pressed at less than 0.3 bars. Maximum pressure at the end of the cycle for the press wine is no more than 2 bars (2 atmospheres). These pressures are generally far lower than those generated by conventional horizontal plate or basket presses."

These lower pressures have a definite effect on the style of the wine. "I am looking for the most delicate aromas in the wine," Traverso asserts. "These are associated with the pulp and the free run juice. The juice near the skin and seeds produced by heavier pressures has more powerful aromas, but it also releases undesirable aromatic elements into the wine.

"This is my style, of course, and it is based on pragmatic considerations. But especially with the grapes I'm working with, this method gives the wine the character I'm looking for."

Recent Concannon Sauvignon Blancs are good examples of the style Traverso describes, "Skin contact increases the grassy components in Sauvignon Blanc and I want to down play the herbaceousness of the grape."

The soil where the winery's Sauvignon Blanc is grown is

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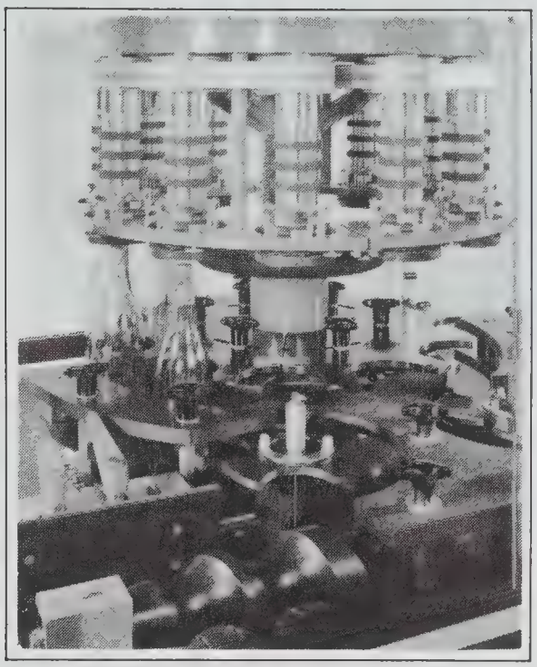

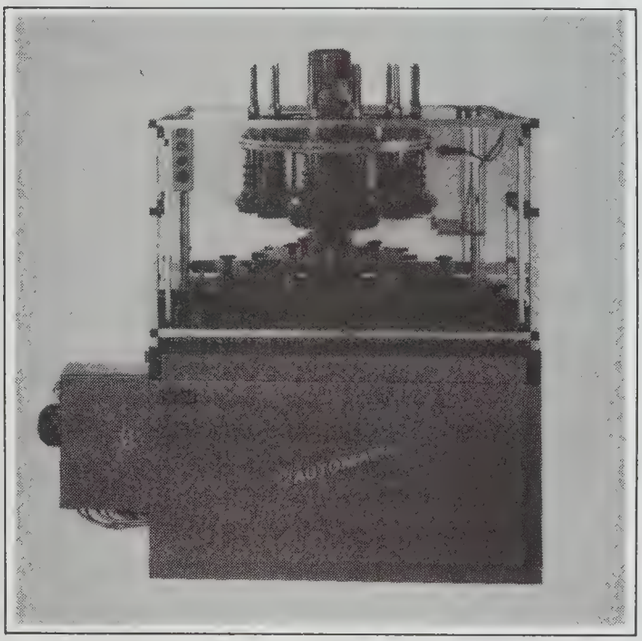

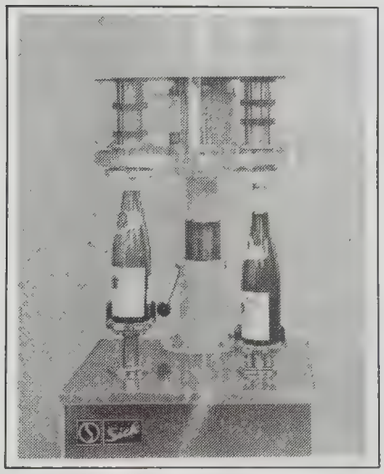

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very sparse and gravelly, very low in nutrients and with very poor water retention. Vines are maintained at all times during the growing season on the verge of being stressed.

"If they had high water retention and plenty of nutrients, they would have more foilage and therefore more of the grassy aromas. Richer soils can lead to an 'excess of aromas' both in Sauvignon Blanc and Chardonnay.

"What I'm trying to do here with whole cluster pressing, is to follow the tendency already in the grapes, to make them into the wine they seem to want to become."

Traverso doesn't feel that Livermore Valley Sauvignon Blanc has much herbaceousness and tries to carry this through in the winemaking style.

He feels the climate and soil near the winery are just right for Sauvignon Blanc. "I don't think the Livermore Valley is as warm as people think," Traverso asserts. "The climate, especially along the southern rim in the gravelly soil where grapes are grown, is cooler than is generally thought.

"When I left Sterling in mid-August '81, the Sauvignon Blanc was being harvested. Here in the Livermore Valley, it was two weeks or more before the grapes reached good sugar levels. I think the climate in this part of the Valley is closer to St. Helena than Calistoga. The breeze comes in through the Hayward gap every afternoon about 3 pm and the fogs stay around as late as 11 am. It gets hot only for a short period. But it's not too cool either like Pouilly Fume and Sancerre where you develop a very grassy aroma.

While at Sterling, Traverso didn't have the option of whole cluster pressing and Sauvignon Blanc grapes were brought in from different vineyards with different soils. Thus, it was not possible to find out about each soil and microclimate and assess the effect they had on the resulting wine.

At Concannon, he feels he has the ideal soil and climate for the variety and that he can define a style for Livermore Valley Sauvignon Blanc.

He says, "It's much easier to define a style with one type of soil. When you have many different types of soil you are constantly balancing one type of character off against another. But, when you have more uniform soils, you can get closer to developing the true personality of an estate bottled wine."

Actually, according to Traverso, there are two main plots of Sauvignon Blanc at Concannon; the main vineyard of 148 acres to the north of the winery is planted in Livermore Very Gravelly Sandy Loam (as defined by the U.S. Soil Survey of 1965) and across the road to the south are the grapes grown on 32 acres of Pleasanton Gravelly Sandy Loam.

Traverso is experimenting with small lots to see what difference might be attributable to the soils. One advantage of the two slightly differing soils is that he can move through both vineyards and pick at uniform maturation levels. Since the vineyards ripen at slightly different rates, he can send crews out to pick at a given Brix and achieve a uniform sugar level throughout.

In 1982, the Estate Bottled Sauvignon Blanc contained 43% Semillon and in 1982, 16% was blended into the Estate wine. The California Sauvignon blanc which uses purchased grapes, averages about 21% Semillon. Blending with Semillon, long a tradition in the Livermore Valley, tones down Sauvignon Blanc's varietal grassiness and adds to the subtlety and complexity of the wine.

Traverso sees definite advantages to whole cluster pressing in addition to the more delicate aromas and the lighter varietal style. The must has better clarity and less solids than conventional pressing: generally, the more pressure, the more solids.

Juice is settled at 45-50°F and neither centrifuge or pectinase are used. With the whole cluster method, he gets good, rapid sedimentation. He uses minimum SO_2 (30-50 ppm for sound fruit.)

One definite plus for the technique is that Traverso gets better acidity and pH with whole cluster pressing. Higher T.A. and lower pH are a result of the fact that the juice in pulp and free run has higher acidity and lower pH than juice around skin and seeds which is extracted with higher pressure. Traverso finds no difference in sugar levels.

Yield averages around 170 gallons per ton. This is a result of the lower pressures; to get 170 gallons by conventional means would require far higher pressures with the stylistic consequences noted above.

At Concannon, Traverso's use of whole cluster pressing with the tank press is a good example of the continuing technological creativity of California winemakers in forging individual wine styles. Other whites produced at the winery show a definite unity of approach and are good examples of what can be achieved through this technique.

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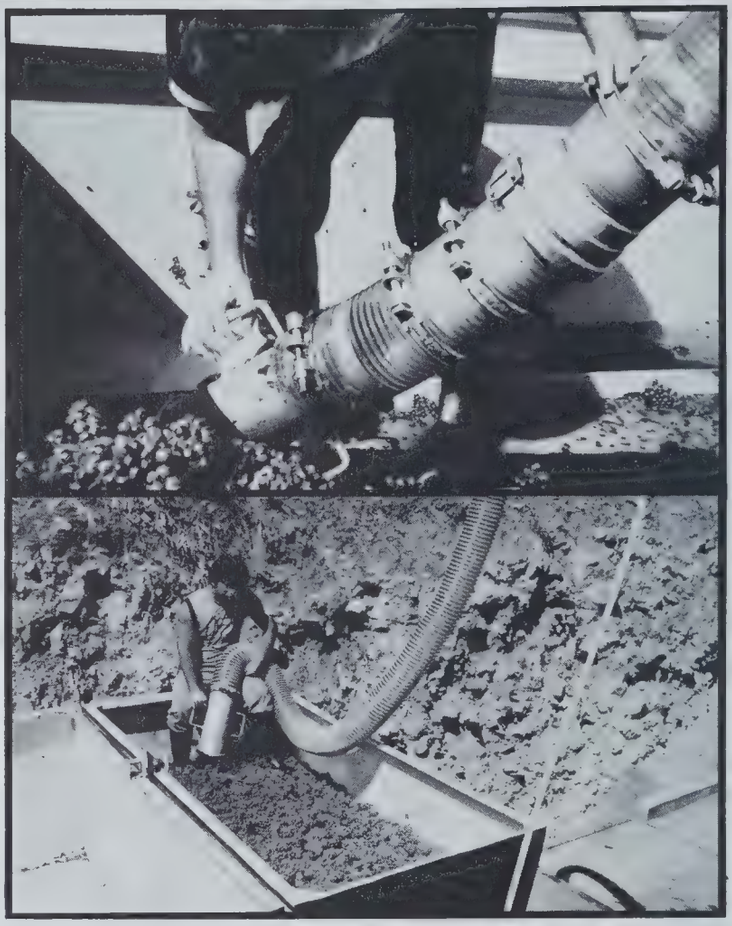

Schramsberg Vineyards, Calistoga, CA, completed an expansion in 1982 to handle planned growth in production. Schramsberg crushed 490 tons of grapes for sparkling wine in 1981, 650 tons for sparkling wine and R and S Vineyards Brandy in 1982, and will this year crush 800 tons for sparkling wine and 200 tons for Brandy.

Expansion included excavating new caves for bottle fermentation storage, adding 10,000 square feet of floor space and installing new equipment for grape handling and pressing.

New equipment included a 2500 hectaliter (hl) and 4500 hl Bucher tank presses, and a Temco vacuum system capable of moving 20 tons of uncrushed grapes/hour from gondolas to the presses. Winemaker, Greg Fowler, reports the system was operated at a speed which handled six tons in 45 minutes. The equipment replaced a standard receiving hopper with auger and bladder press.

52,600 gallons of new stainless steel jacketed tank capacity was added to bring the winery total to 140,000 gallons. Additions of 14,000 gallons tank capacity are planned before the '83 and '84 crush. The glycol cooling system was increased from 10 to 40 tons with the addition of a 40 hp compressor

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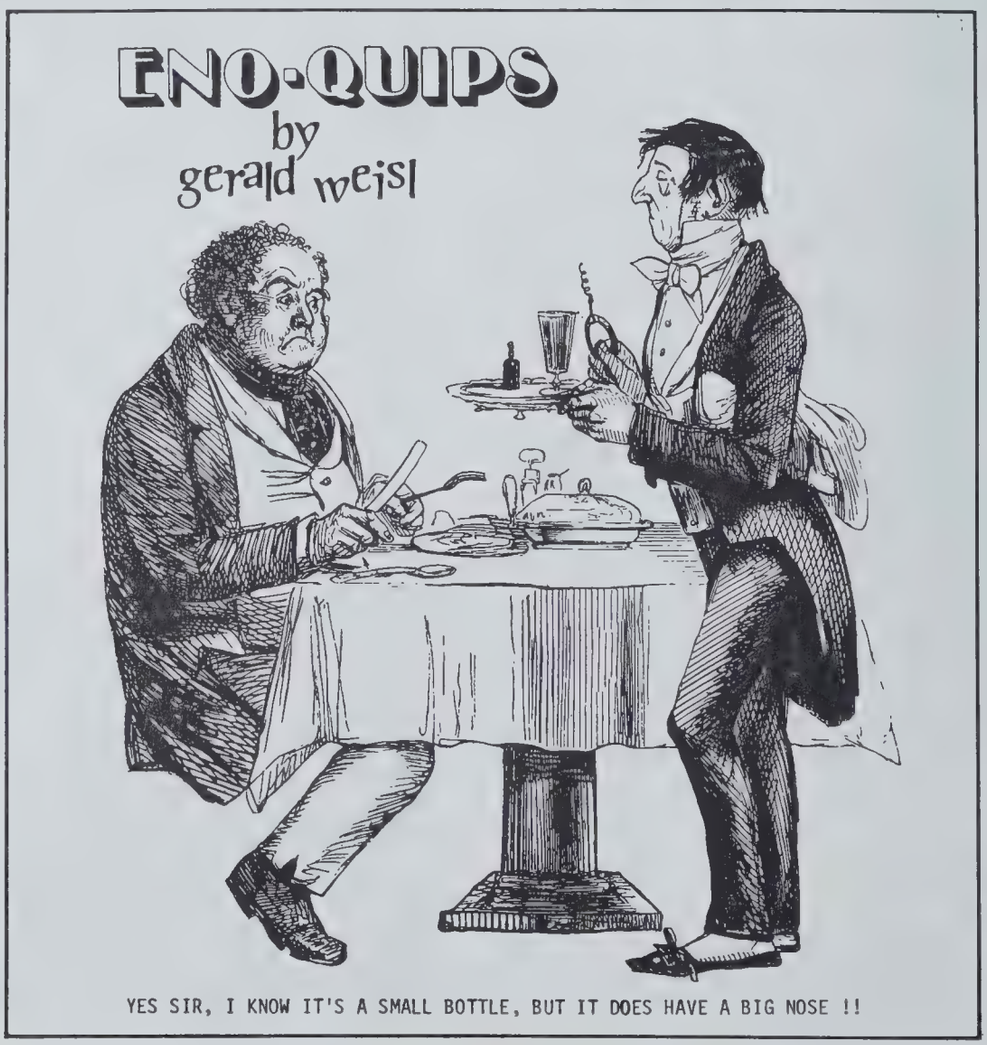
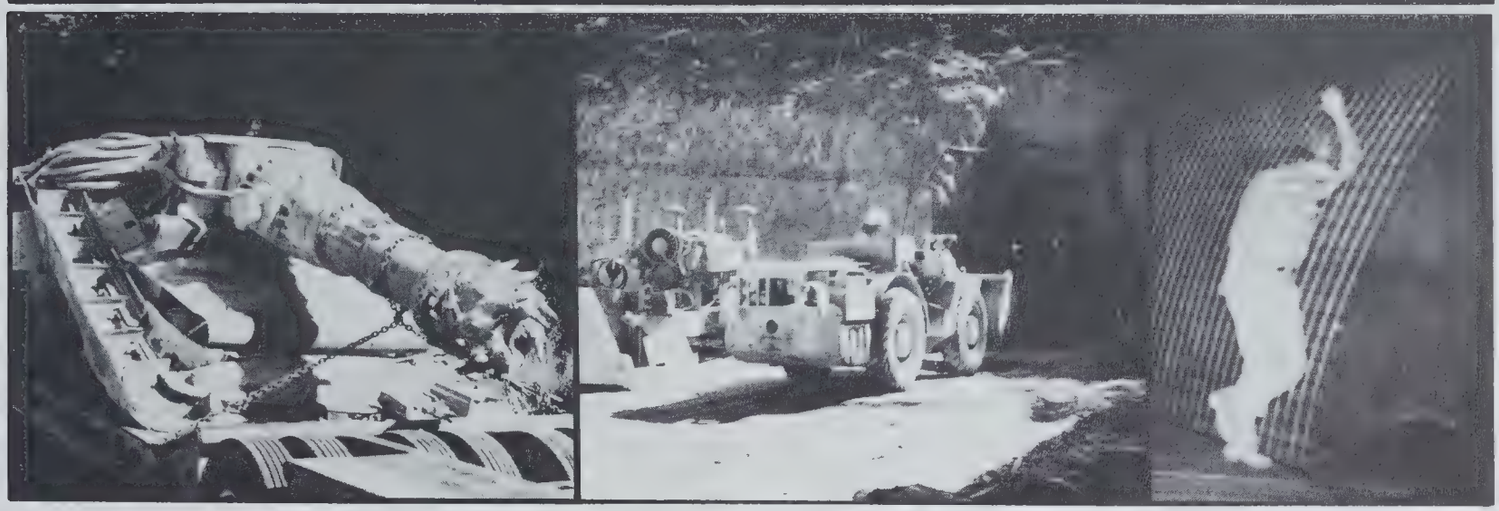




by IRAPP, Inc.

Schramsberg received 35 lots made up of five grape varieties delivered by 13 growers in 1982. Grapes included Chardonnay, Flora, Napa Gamay, Pinot Blanc, and Pinot Noir.

Fowler reports the equipment provided much better control over the grapes. The combined pneumatic handling system and tank presses improved juice quality significantly. Phenolics were reduced from typical levels of 330 mg/L and 350 mg/L in 1981, to 180 mg/L and 230 mg/L in two '82 lots. Solids and colloids were reduced while still retaining the small proteins necessary for secondary yeast fermentation.

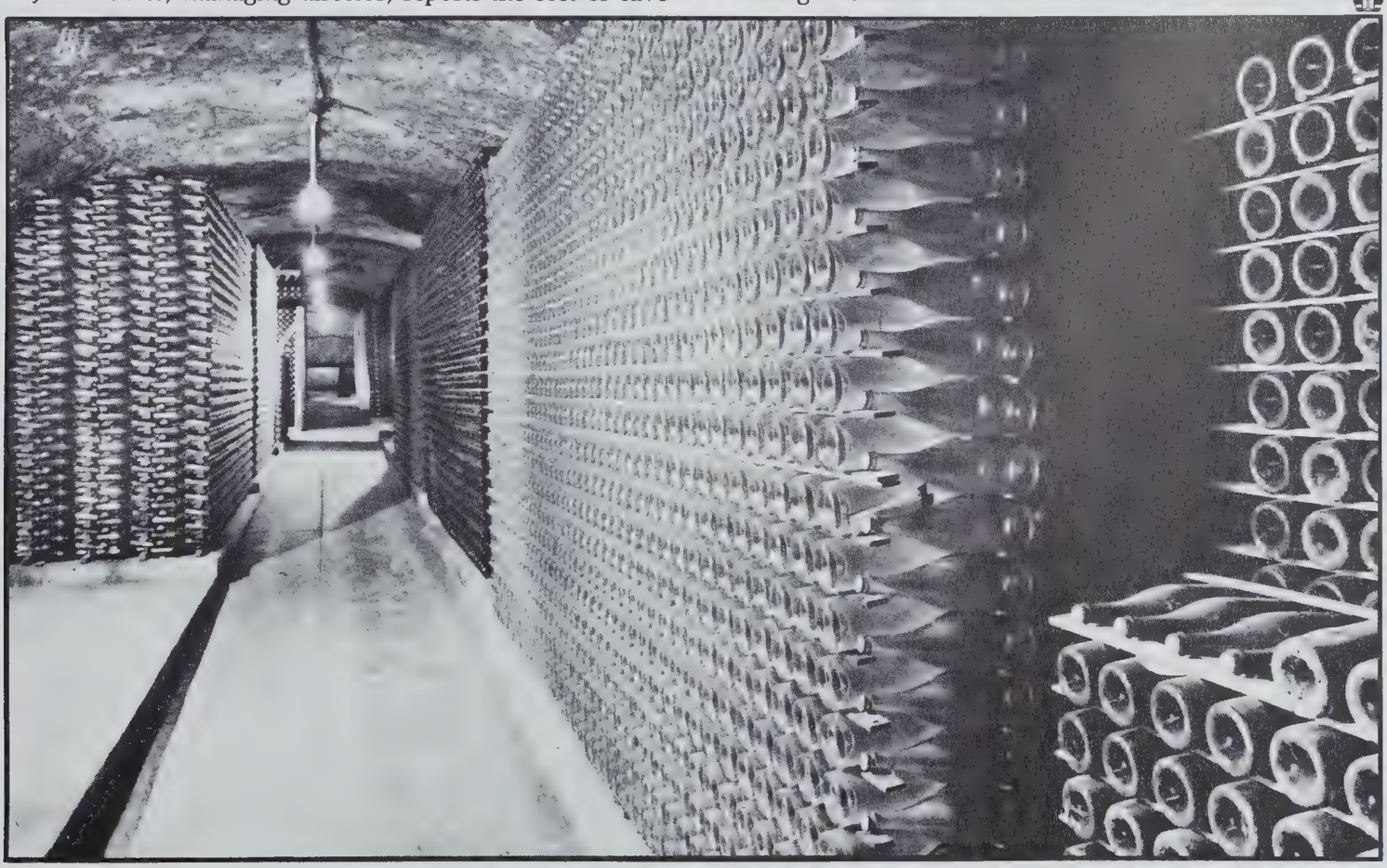
Caves dug out of the hillside of pumice (volcanic ash) by Alf Burtelson have tripled the cave storage capacity for secondary bottle fermentation (which takes 2, 3, or 4 years) to 1.6 million bottles.

Jack Davies, managing director, reports the cost of cave excavation was below the cost of constructing an above ground building of equal space. The caves maintain an average natural temperature of 58°F, eliminating the cost of air conditioning.

They have been working with Fabricated Metals to properly program FM's Gyro-Pallett to riddle the Blanc de Noir for some time and hope to find an acceptable method in the near future. Fowler notes that while the Gyro-Pallett may work with certain bottlings in each Champagne house, each house uses different grapes, different yeasts, etc. and therefore a program must be tailor-made to each bottling.

Schramsberg, will always hand riddle some fraction of their production due to particular yeast development or stability or combination of the two factors in addition to magnum bottles.

A new Perrier dosage and topping unit capable of handling in excess of 4,000 bottles/day has been installed on the bottling line.



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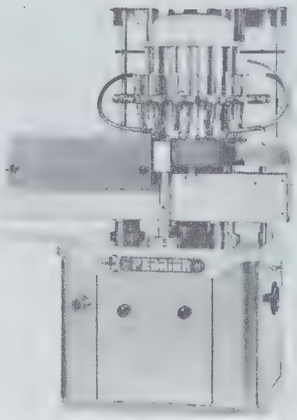

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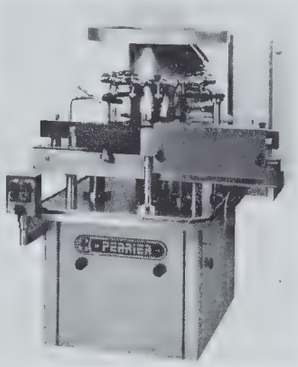

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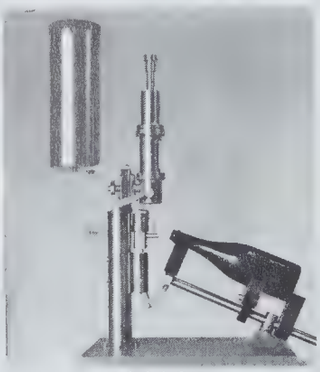

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IN THE CELLAR
with Jake Lorenzo

ed.note: Jake took the thrill of being published predictably. He went on a binge. I found him three days into a binge in Steiners' Bar. He gave me this rambling manuscript and said if I changed a single word, he'd shoot me in the leg.

I shivered in the fierce cold of Candlestick Park. My nearly empty bottle of Hornitos wasn't helping and I had lost feeling in my toes before half-time. The crowd was unusually drunk, which was typical for a Sunday night game.

The more the Atlanta Falcons thrashed the 49ers, the more belligerent became the crowd. The call came over my walkie talkie, "Head of Security to Section 8, code blue." I drained the half pint and hurried over.

He was huge, at least 6-8, about 250 lbs. His shirt was off and sweat glistened from his rippling muscles. He was whipping a large pipe wrench through the air and three of my security guards were on the ground bleeding. I pulled my gun and dropped the guy with a leg shot.

I figured my quick thinking had saved a nasty situation from getting worse. My boss didn't see it that way. "We can't have our Head of Security shooting the fans." Quick thinking cost me my job! The point I'm trying to make is that it wasn't personal. I had just sized up the situation and tried to do my job.

Winemaking, on the other hand, is extremely personal. Wines reflect the personality and philosophy of the winemaker just as much as they reflect the grapes from which

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they are produced. In addition, consumers select wines based on carefully calculated prejudices.

As a consumer, I much prefer wines made by 'real' winemakers. A real winemaker to my way of thinking is a person who has a worn pair of rubber boots, has grape stained hands during CRUSH, has great appreciation and respect for cellar rats, and never asks me to work on a divorce case!

Real winemakers are synonymous with good people and exist at all levels of the wine business.

A good example is Arnold Tudal of Tudal Winery. Arnold is a transplanted farmer now growing grapes and making wine just north of St. Helena. He is a meticulous, enthusiastic and good natured man. His vineyard is manicured to the point of elegance and so is his Cabernet Sauvignon!

Nobody ever heard of Charlie Tolbert when he worked in the cellar of Chateau St. Jean. Now he's the winemaker at Haywood Winery where he quietly goes about producing beautiful, well balanced wines year after year.

Last year, I spent an entire afternoon talking to and tasting with John Parducci. There's a real dynamo! He's opinionated, dedicated, and still excited by winemaking.

He dragged me through the whole winery tasting tank samples, talking about vintages, oak, techniques. When you finish with John Parducci, you've got to stop just to catch your breath, but year after year, he keeps producing fine, modestly priced wines.

The winemakers art is sensitivity, for a winemaker must be sensitive to the nuance of the grape, to the balance of the fruit, to the flavor of the oak. Individual personalities influence this sensitivity and are reflected in the finished wines. John Parducci's wines are as different from Arnold Tudal's or Charlies Tolbert's as much because of the people who made them as the grapes from which they were made.

Differences are what makes the wine business so exciting! But differences may also be the undoing of some winemakers this June. This year's ASE convention is in Reno, and despite what you might hear, Reno is not at all like a cellar! Reno is gambling, drinking, sex and glitter. Jake Lorenzo's territory! So heed what I say!

The first thing to realize when you get to Reno is that you are not famous winemakers. In Reno, you are conventioneers. Winemakers, Elks Club, Daughters of the American Revolution, makes no difference in Reno. A conventioneer is a conventioneer.

A conventioneer is also a prospective gambler. Prospective gamblers are prospective losers, and losers pay the freight. Remember the voluptuous waitress wearing the costume no larger than your wine label is not plying you with drinks because she's a fan of a famous winemaker!

Remember that the casinos may give credit easier than P.C.A., but they have a much different late payment policy. And remember that no matter how much you beg and plead, casinos are not likely to take all that Zinfandel piled up in your warehouse in lieu of gambling debts.

Have a good time, and if you bump into Jake Lorenzo, and he's still conscious, by all means, buy him a drink!

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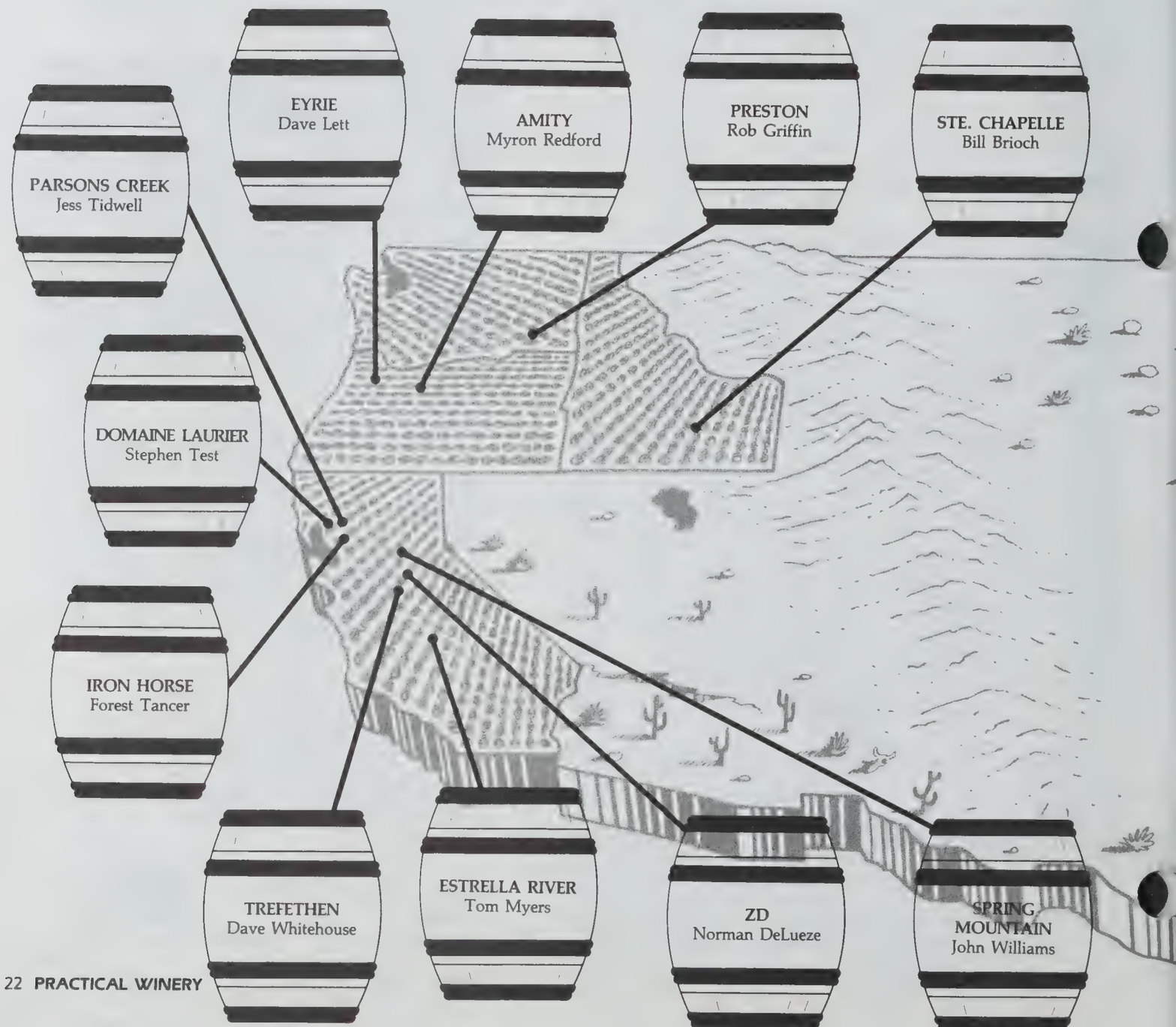
Chardonnay

Prepared By
NANCY LYNN GRAY, SCOTT CLEMENS & DON NEEL



Of the vitus vinifera planted in the United States, Chardonnay is being grown and produced with the greatest commercial success and consistency. As universally popular as it may be, Chardonnay still remains a distinctive product of the area in which it is grown.

In each state, each area and each individual microclimate, it grows differently and needs to be cultivated and harvested accordingly.

As expected, each area has its own set of problems with Chardonnay production, from reluctant grape maturity in one area to overripening in another, or bunch rot, bud kill, or the nemesis of hungry birds.

How do winemakers in nine different states deal with their individual set of problems? What techniques and tricks have they discovered and what difficulties do they continue to face every year?

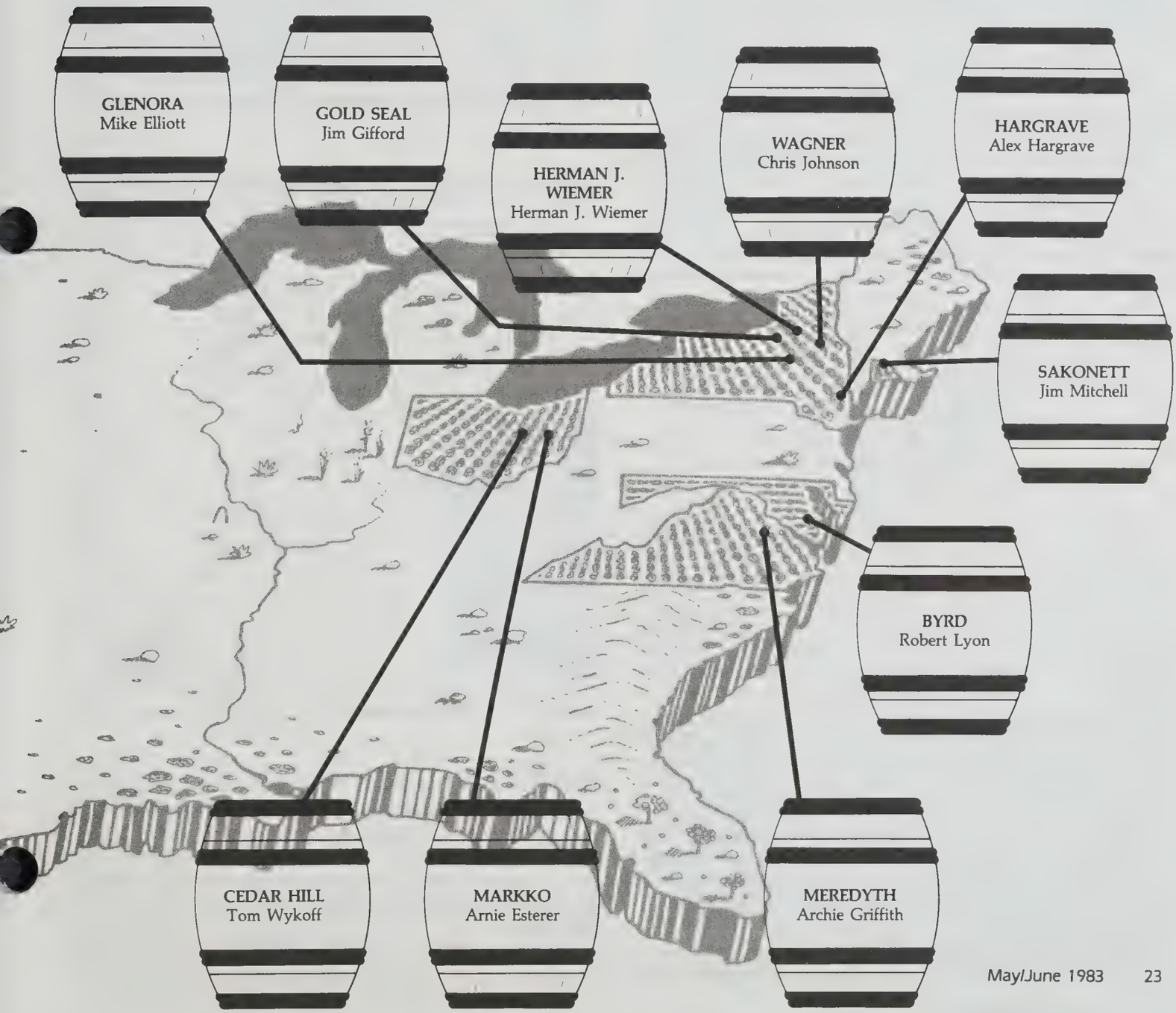
In making Chardonnay, a winemaker in Virginia cannot follow a California winemaker's rule book. The same variety perhaps, yet a fruit of different chemistry and character. How does each winemaker work with the fruit of his area to develop his style of Chardonnay?

And if, in some areas, Chardonnay is such a tyrant to grow, with tendencies towards disease and rot, unpredictable in its yields and degree of maturity at harvest from year to year—why does the winemaker bother?

What is the charm of this white wonder? Is it merely a higher bottle price than many other wines command and the popularity of its name? Is there a distinctive superior quality in this grape and in the wines that can be challenged by no other?

Winemakers chosen for this analysis of Chardonnay produced in nine different states represent wineries from a variety of viticultural appellations, all of which are known for producing high acid Chardonnays.

Each winemaker has been producing Chardonnay for several years and, as these interviews prove, have come to terms with the viticultural and winemaking conditions inherent to that area.



Describe your style of Chardonnay:

CALIFORNIA

Domaine Laurier Chardonnay is described by Test as a food wine, crisp with acid, emphasizing the fruit. The wines often carry pippin apple and peach flavors with some oak complexity. While the wine is given 10-12 months bottle age prior to release, Test feels the wine needs at least seven months in the bottle and they will be wonderful within a couple of years of bottling and hold their quality for many years after.

Meyers feels the **Estrella River** style of Chardonnay is representative of their moderately warm climate. "It is a wine rich in fruit with oak character along with big body," says Meyers. "I feel our style is more influenced by our climate than by winemaking methods, although we have so much fruitiness that we strive to play up complexity through winemaking."

Iron Horse Chardonnay style is dictated by the Sonoma Green Valley viticultural area. An extremely cool area, the grapes produce a base wine that is very fruity, almost tropical, pineapple-like. "The wines are best made by utilizing these factors to emphasize delicacy and finesse that will develop with bottle age," says Tancer.

Tancer feels the best time to drink his Chardonnay depends on your personal preferences. When young, the wines tend to be very fruity, crisp and fairly green. Within a year, they change to a more complex wine. "With the wine world situation as it is now, you have to walk that tightrope and say, 'Sure it's nice to drink now, but it will also improve later on'," says Tancer.

"It's silly to make a wine that needs to age ten years because no one is going to hold onto it for ten years." Tancer also feels a lot depends on the individual vintage. "The '79, '80, and '81 will probably be longer lived due to their high acidity and fruit. The '78, '79, and '81 are showing well right now. '80 was an oddball, much richer than most Iron Horse Chardonnays, more alcoholic and viscous."

Tidwell describes **Parsons Creek** Chardonnay as fruity, young, with a slight sweetness to give it a bigger feel in the mouth and some extra complexity. Tidwell prefers to drink both the Mendocino and Sonoma bottlings of Chardonnay when young. The Mendocino is made to be drunk when young and fruity, after three months of bottling. The Sonoma County Chardonnay 'goes on and on and on' according to Tidwell.

Spring Mountain Chardonnay style has been evolving over the past few years. The wines have a reputation for being full and richly flavored, according to Williams, but they are moving towards lower alcohol, higher acidity and a better balance of flavors.

Chardonnay is bottle aged one year prior to release. "They will age well for up to ten years," says Williams, "vintages from the early 1970's are still developing in the bottle." He normally recommends the wines be drunk after three-four years in the bottle.

Whitehouse describes **Trefethen** Chardonnay as less overpowering than most California Chardonnays, with more fruit, more finesse, balance and a good level of acidity. Bottled in August, the wine is given 13 months bottle age prior to release. "We have found the wine improves tremendously after the first year of release and they age very well for five-six more years," says Whitehouse.

"**ZD** Chardonnays move through a range of characters," says Deleuze. "They have a grapefruity character when young. With bottle maturity they develop a more pineapple-apple complexity. After a year, they have a buttery depth which evolves into a smokey type character when they are quite mature."

ZD tries to hold onto their Chardonnay for a minimum of six months. "We are holding the wine longer than we used to because we think the wine shows dramatic improvement in that first six months or so in the bottle," says Deleuze. Deleuze feels the wine is best consumed one-three years after bottling.

IDAHO

Broich seeks a big aroma and bouquet at **Ste. Chapelle.** A high acid level with moderate oak provides stability, backbone, a foundation for the wine which stands up to food. Broich recommends the wine with cheese and fresh fish dishes without sauce including fresh salmon and trout.

Broich had tried some barrel fermentation and longer oak ageing up through 1979, but changed his technique to cold tank fermentation and barrel ageing which he feels shows the wine better.

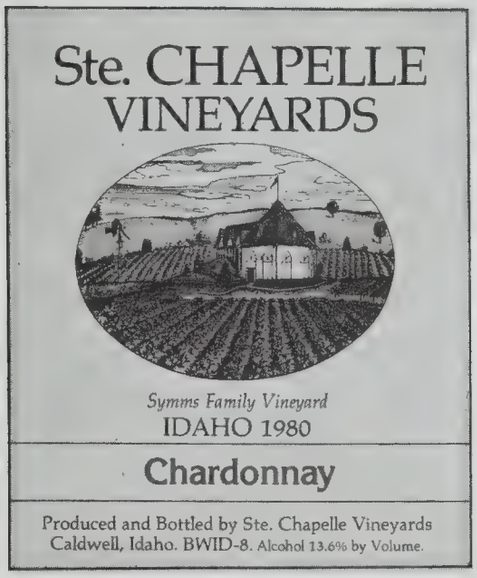
Dave Lett

MARYLAND

Byrd Chardonnay could be called California style made for the Eastern palate, according to Lyon. It is characterized by high grape maturity (23-23.5° Brix) with sufficient acid at harvest, some oak fermentation, high alcohol (13-13.5%), cold fermentation, no malo-lactic fermentation, and a lot of oak age.

Lyon likes to add back the maximum acid to the point of tartness for the eastern palate, and to achieve the fullest wine

possible. The slight excess of acid at bottling does smooth out with age. Lyon adds that this style is not always achieved on the east coast, but this is the style to shoot for if the weather permits the grapes to mature fully.



Bill Brioch

NEW YORK

Glenora Chardonnay is clean and fresh with a minimum of oak, crisp with high acid, comments Elliott. It is modeled after the Chablis-Macon style. It is drinkable fairly early, drinking well after one year bottle age and holds up for a couple of more years due to its good acid.

"**Gold Seal** Chardonnay is rich with a nice balance of fruit and oak. It has vinous character, high alcohol, and moderate tannin," says Gifford. "The wine ages slowly because it did not undergo malo-lactic fermentation and should be consumed one-two years after bottling. '80 was my first year at Gold Seal and I did change from the previous style of Chardonnay made at Gold Seal."

Hargrave Chardonnay has a lot of clean fruit, describes Hargrave. It is a buttery, complex Chardonnay. You can appreciate the wine one year after bottling though the wine continues to develop and improve, exchanging fruit for complexity.

"**Hermann J. Wiemer** Chardonnay is fruity with alcohol in the low 12's, a good sipping or food wine, and can be consumed four-five months after bottling," says Wiemer.

Wagner Chardonnay is fairly fruity, a rounder wine than some New York wines due to malo-lactic complexity, when appropriate, mixed with some oak to complement the fruit, according to Johnson.

OHIO

Wykoff describes **Cedar Hill** Chardonnay as resembling the Chablis style, a marriage of fruit and wood with elegant character. The wine seems to reach maturity with three years of bottle age.

Markko's style of Chardonnay varies depending on the particular vintage's grapes, according to Esterer. "1980 was light and delicate in a French Chablis style. We have good acids to allow long term maturity, the wines peak two-three years after bottling and plateau for several years."

OREGON

"Oregon grapes lend themselves to a style similar to Chablis or Macon, with 11-12% alcohol," says Redford at **Amity**.

At **Eyrie Vineyards**, Lett strives for crisp, restrained varietal expression with flavor complexity, without intensity, with low alcohol to go with food.

RHODE ISLAND

Mitchell describes **Sakonnet** Chardonnay as comparable to French Chablis, clean and hard with relatively high acid, flinty, with alcohol ranging from 11.9% to 13.3%. The wine has continued to improve after two-three years of bottle age.

VIRGINIA

Meredyth's style has changed since the first Chardonnay in 1979. "We let the fruit dictate our style and while we have found significant differences between wines grown in different areas, it is too early to draw hard and fast conclusions," says Smith.

"Some wines come out fairly austere and 'European' in style, while others are fatter and riper. We are still searching for the right mix of site, viticultural practice, picking criteria and winemaking technique."

Smith will probably continue to ferment at least a part of each lot in wood, possibly in small wood. "I like American oak as long as it is not over done."

WASHINGTON

Preston has good body and crisp acidity in the style of classic white Burgundies, says Griffin. Griffin notes that Washington grapes achieve ripeness (22-23.5° Brix) and develop good fruit while maintaining relatively strong acid (0.9-1.2).

What are the characteristics of the vineyards?

CALIFORNIA

Domaine Laurier harvests Chardonnay from two vineyards in Sonoma County, both within ten miles of the winery. The Dutton Ranch in Graton is a hillside vineyard on well-drained soils. The climate is cool, often receiving morning fog. While equipped with overhead sprinklers, irrigation is rarely necessary. The cane-pruned vines yield three-five tons/acre.

The Hopkins vineyard along the Russian River is on gravelly benchland soils. The climate is similar to that of the Dutton Ranch and the fruit, harvested at four-five tons/acre, carries many of the same characteristics.

Estrella River's Estate Chardonnay comes from vineyards within two miles of the winery. The Paso Robles area is considered a high Region II or low Region III. Climate is pretty dry with low humidity so there are few problems with mildew and bunch rot.

Soil is a clay loam though with the rolling topography of the vineyard, the soils tend to vary. Gypsum was added to the soils several years ago to help permeability and was ripped to break up a thin hard pan two feet below the surface. The vineyard is irrigated with overhead sprinklers.

Iron Horse Vineyard has a long growing season due to the coolness of the area. Even in the summer, night temperatures will drop 20°F from daytime temperatures. Soils are well drained sandy clay loam. Vines were planted in 1971 and are cane-pruned to yield three-three and one quarter tons/acre. The vineyard is equipped with overhead sprinklers to battle frosts which strike almost 20 days/year.

Parsons Creek makes two Chardonnays, one from Mendocino County and one from Sonoma County. Sonoma County grapes are harvested from the Vogenson Ranch in the Dry Creek area and from the Keith Ranch in the Alexander Valley. The Mendocino vineyard is in the Anderson Valley.

Soil on the Vogenson Ranch is sandy loam and the climate tends to have cool mornings, a lot of fog and warm days. Drip irrigation is used just to keep it going. Keith Ranch on the Russian River has similar conditions except that it is a bit warmer. Both vineyards are cane-pruned and yield approximately three-four tons/acre.

Anderson Valley has an unusual growing season. Grapes ripen late, usually in November. This is partly due to the fact that the climate is extremely cool and foggy. Soils are heavier, clay-type. These grapes tend to be lighter in quality, fruity with good acids.

Tidwell pays an acid bonus for his grapes and every year he has had to pay the bonus for this vineyard. The problem with this vineyard is the grapes are so late to ripen, they often get rained on and there is a problem with bunch rot.

"I believe Chardonnay in this area, due to its problems with bunch rot, will lend itself more to sparkling wine production," says Tidwell. He may shift all his still wine production, except Johannisberg Riesling, out of the Anderson Valley just because of the late maturity problems.

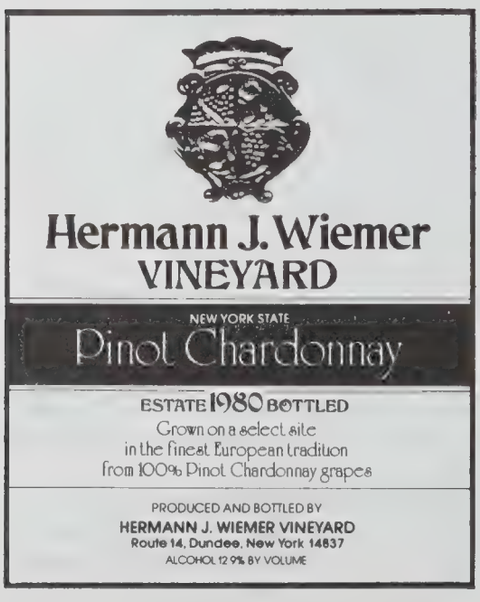
In comparing Sonoma grapes to Mendocino grapes, Tidwell finds Mendocino grapes make a lighter, fruitier wine for early drinking while Sonoma grapes tend to make a heavier, bigger Chardonnay with a slight vegetative quality that can stand up to more oak ageing.

Spring Mountain harvests approximately 65% of their Chardonnay from the Rutherford area of Napa Valley with the remainder coming from the Soda Canyon area. Williams feels that Rutherford is about as far up the Napa Valley floor as one can go and still produce great Chardonnay.

Rutherford vineyards have rich valley, benchland and loamy soils. A warm Region II, grapes ripen earlier and tend to make a big, lush style of wine while the Napa-Soda Canyon yields more austere fruit, higher in acidity. The differences of the vineyards are usually blended to balance each other.

Both vineyards yield approximately two and one half tons/acre and have been used by Spring Mountain since the beginning of their Chardonnay production. Most of the vines are cane-pruned though some have been cordon-pruned with great success. Cordon-pruning gives a more even exposure to the basal leaves and eliminates the bunching of clusters which occurs in cane-pruning.

Tom Wykoff



Herman J. Wiemer

Trefethen harvests Chardonnay from their own vineyards which surround the Napa Valley winery. Climate is a warm Region I or a cool Region II, depending on the year. Soils are gravely loam.

Vines have been cane-pruned to yield three to three and one half tons per acre. Cordon-pruning has been tried recently in some areas of the vineyard in order to increase productivity by increasing the wood and because cordon-pruned vines are easier to pick with a pulsator type mechanical harvester. Cordon-pruning is also much easier and requires less tying, according to Whitehouse.

For the last several years, **ZD** has harvested 75-85% of their Chardonnay from the Tepusquet Vineyard in Santa Maria with the remainder from vineyards in Sonoma Valley and the Carneros region. Vineyards are blended together to produce one California Chardonnay.

Tepusquet is a cool climate area, approximating Region I or II, but because the days are short the region is cooler than indicated by their region classification. Soils are rocky loam. Vines are on their own rootstock and are cane-pruned to yield four tons/acre. "Tepusquet grapes tend to have a great depth of character, towards a Montrachet style as opposed to the Chablis style we get here in Napa," says Deleuze.

The Napa-Carneros vineyard has heavy clay soil. It is dry farmed and the eight-year-old vines are cane-pruned. The vineyard in Sonoma Valley has deep fertile valley soil. The

Arnie Esterer

area is warm for Chardonnay so the acids tend to be on the low side but this blends nicely with the high acidity of Tepusquet.

IDAHO

Ste. Chapelle vineyards were planted in 1971 between 2700 and 3000 foot elevation on a slope to the Snake River in volcanic, sandy soil. Additional Chardonnay was planted in 1978. Chardonnay is planted on western slopes which have a ten day shorter growing season than the southern slopes.

A typical winter will see 10 °F for three nights without vine damage. Summer days peak at 85-90 °F and cool to nights of 45-50 °F which hold up acids well, as the sandy soils cool off at night. Rainfall is nine inches/year and irrigation is used until about August 10 when turned off to dry out the vineyard.

Bud break occurs about April 20, bloom about June 10 and harvest between October 10-18. The bilateral cordon-pruned vineyard yields three-four tons/acre. Older vines are from the Wente clone, younger vines are UCD 108. Small additions of nitrogen and potassium are made yearly.

MARYLAND

Byrd's estate vineyard has greenstone soil at 850 foot elevation, which is a rich, acidic gravelly loam soil. The non-irrigated vineyard has a southwest exposure and receives an average of 34-36 inches of rainfall spread throughout the year.

A normal average winter will get below 0 °F. Five below happens maybe once in five years. The peak of summer will see 85 °-90-95 ° F with a high humidity of 60-70%. Typical bud break is mid-April and maximum maturity is reached about October 1.

September is a very wet month and vines are sprayed every 10-14 days when raining. Powdery mildew and mold are prevented by spraying every 7-10 days during the peak of growth in the spring. Head trained, cane-pruned vines are left with 4-6 canes and 70% of those will survive a harsh winter. After a decent winter, production can be three-five tons/acre. Despite harsh winters, Chardonnay vines survive the winter pretty well, according to Lyon.

NEW YORK

Glenora partners have vineyards on east and west slopes of Cayuga Lake within 100-200 feet above the lake's surface. Bud break normally occurs in the middle or end of May and harvest between the 20th-30th of September. 1980 included a bottling from the Plane's Cayuga Vineyard.

Gold Seal vines are planted on a western exposure slope 300-400 feet above a lake in non-irrigated, well drained, medium-heavy clay soil with a small amount of slate 5-6 feet deep. Grapes are mostly hand picked from the three-trunk vines which produce about three tons/acre.

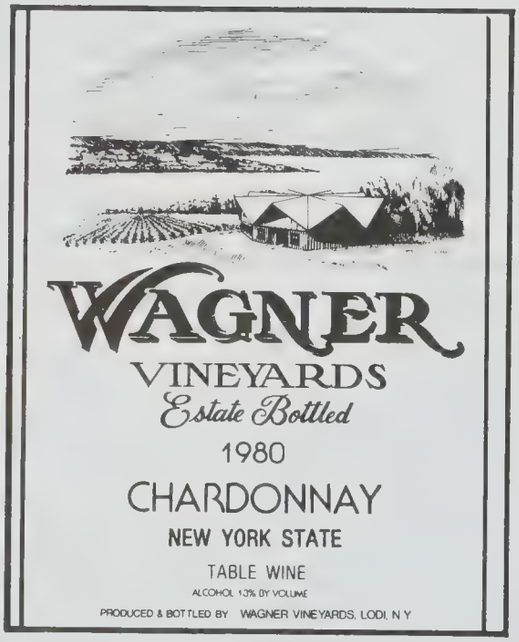
A winter danger is severe temperature drop. Sulphur spraying begins before bud break in late April and continues every one-two weeks for a total of 10-12 sprays. The spray program may include Balyeton and Ronilan toward harvest.

Hargrave Vineyard was previously all potato fields or fallow. It is on the north fork of Long Island giving it a natural thermostat of Long Island Sound and Great Peconic Bay, two shallow bodies of saltwater. Chardonnay vines were first planted in 1974, followed by more in 1979.

The light sandy soil, with less than two percent organic matter is neutral with no seabed residual. The loose soil drains well and allows rapid root penetration. Snow is rare, but there is a fear of rootfreeze from the extremely friable soil.

Bloom occurs in mid-June as part of the 210 day growing season, concluded by harvest between September 26-October 10, at temperatures between 50-70 °F. Summer temperatures average 75-85 °F with a rare day above 85-90 °F allowing vine photosynthesis all summer long. A typical winter will reach 14 °F with minor snowfall and little rainfall on the non-irrigated vineyard. Vines headed at the mid-wire produce a consistent three tons/acre and receive ordinary fungus control sprays.

Chris Johnson



Herman Wiemer's vineyard is on the west side of Lake Seneca. The eastern exposure reduces the extreme sun temperature changes in the spring. The vineyard is silt loam and 30% shale on a five percent slope within a mile of the lake between 650-700 feet in elevation.

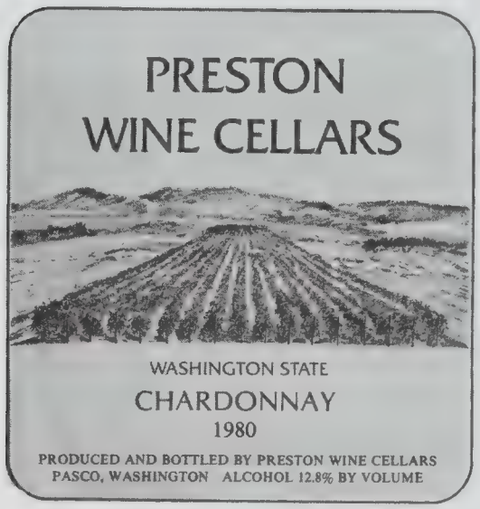
Typically, six or seven sulphur sprays are given each year for mildew protection. Planted in 1973, the 6 X 9 spacings produce an average of 2 1/2-3 tons/acre, though a yield of 4-4 1/2 tons/acre occurred in 1980.

Wagner's estate vineyard is between 800-1000 foot elevation on a western exposed slope of Seneca Lake. The vineyard is planted within one mile of the lake, which is up to 650

feet deep and never freezes over in winters though it may receive a total average of 30 inches of snow.

Winds come from the west across the lake and the temperate air circulation helps protect against spring frost on new shoot growth. Two-trunk vines on a three-wire trellis produce about three tons/acre and are mechanically harvested.

Soil is honeoye-l'ima, a deep, well drained heavy silt loam with a heavy loam subsoil. Grass mulch is used to control erosion, break down the soil and give extra humus and improve the natural drainage. Potash was added before planting in 1977. Nitrogen of 100 pounds/acre is added yearly.



Rob Griffin

OHIO

Grapes for **Cedar Hill** Chardonnay come from the Markko vineyard or the John Moorhead Vineyard, both on the southern shore of Lake Erie.

Markko vineyard has four acres of Chardonnay, planted in 1972, in plateau-silt loam soil on a 2-12% slope with a northern exposure which delays budding in the spring. The non-irrigated vineyard with a Macon variation of the casenave trellis system has produced a high of 4.5 tons/acre and a low of one ton/acre after a severe bud kill. The goal is to crop them just right so that the vines do not grow too slow or too fast during a typical winter.

Typical winters include lows of 5-10°F below zero with high winds. An average winter wind off nearby Lake Erie is 14-15 mph and summer winds reach 10 mph. Total snowfall may reach 50-60 inches with no more than 10 inches on the ground at once. 16-17 inches of rain falls during the growing season with an equal amount during the balance of the year.

Typical bud break is about May 1 and harvest about October 6. A fungicide spray is given before bud break and mildew sprays are done weekly. An organic feed of dehydrated seaweed emulsified in water is sprayed on the vines to enhance the grape's sugar and winter hardiness of the vine.

OREGON

Amity used grapes from three vineyards in the Willamette Valley of Oregon in 1980. 60% of the blend came from the Champoeg Vineyard in Aurora. The estate vineyard produced 25% of the blend and 15% came from the Chardonnay Oaks Vineyard in Yamhill.

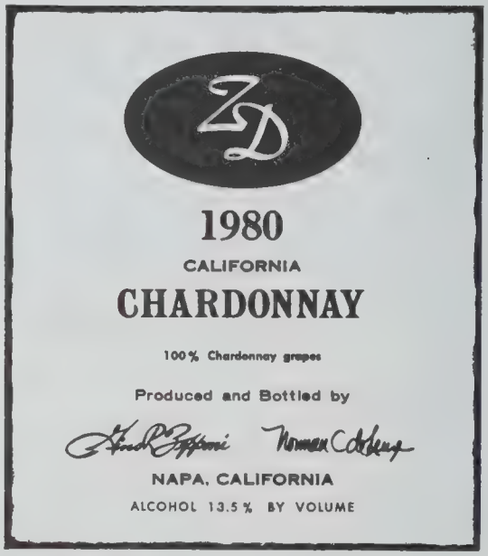
Two clones are planted in the estate vineyard: the Draper Vineyard clone and the heat-treated Davis clone. Draper vines will produce about one third less crop, a smaller cluster, lower acid levels, but about 1° higher sugar than the Davis clone. Vines are pruned to three tons/acre to achieve flavor intensity.

Champoeg Vineyard is on a butte at 300 foot elevation on the south side of the Willamette River in woodburn soil, which has five feet of deep silty, clay loam. The location is warmer than the estate site, and grapes will reach 1-1 1/2° higher Brix than estate grapes. Both clones are planted there.

In 1980, grapes for **Eyrie** came from the Dundee Hills Vineyard at 700 foot elevation as downey mildew destroyed most of the home vineyard that year. The home vineyard is at a 450 feet elevation. "Elevation makes a lot of difference in the tricky ripening of Oregon grapes," says Lett.

Lett has the Draper clone in the home vineyard to produce a smaller cluster and thereby a more elegant wine. The vertical curtain vines yield a maximum of three tons/acre. Leaves are pulled in August to increase the Brix and reduce acidity. Lett feels that the optimum wine may be a blend of the Draper and heat-treated clones.

Norman DeLueze



RHODE ISLAND

Sakonnet's vineyard has decomposed slate and glacial till, moderately deep, well drained sandy silt loam with an underlaying hardpan of semi-permeable material. The water-table is at depths of eight feet or more under the non-irrigated vineyard. Potassium, phosphate and nitrogen have been added to the soil.

In summer, temperatures never exceed 90°F with the daily temperature variation being 20°F. Average temperatures are 71°F in July and 25°F in January. The last frost in spring is usually about April 10 and the first fall frost about November 10. Bloom usually occurs between May 5-10 and harvest is about October 15 when temperatures are in the low 50's-low 60's.

Mitchell normally puts on 11 or 12 sprays per year for downey mildew, black rot, botrytis and botrytis bunch rot. Vines are on a low wire trellis system. Canes from multiple

trunks are 10-20 inches in length and are supported 30 inches above ground with double catch wires. Vines planted in 1975 produce two-three tons/acre.

In regard to pruning, Mitchell is trying to find the right balance of vegetative and fruit growth. Birds are a problem here and his techniques include an AV-alarm used in airports. Every day at sunrise, several loud speakers, positioned throughout the vineyard, amplify a sound similar to that of a scared pheasant, in different directions and at different frequencies.

Mitchell also has two zon guns (gas fired cannons which sound like 12 gauge shotguns) in the forty acre vineyard which are fired on a two-five minute frequency all day. A hawk kite has been used, and three golden retrievers escort Mitchell and his shotgun on vineyard tours.

VIRGINIA

Meredyth's 1980 vintage came from young vines, four and five years old. The estate vineyard is sandy loam at a 600 foot elevation. The estate vineyard is rated at 2800-3200 degree days with a summer day rarely over 90-95 °F.

In 1980, four vineyard lots were fermented including the estate grapes, all in Fauquier County. One of the other vineyards is located in the north-western half of the county at 900 foot elevation, has a cooler growing season and off-shale soil. Bud break occurs about April 20 and harvest will occur around September 10. Temperature at harvest can be the high 80's or low 60's.

WASHINGTON

Preston's vineyard is planted in sandy loam soil and irrigated to supplement annual rainfall to six-eight inches. The vines are bilateral cordon-pruned to yield three-five tons/acre; four is the average. Griffin notes cropping under these levels presents problems of high acids and high sugars and high alcohol wines.

Bud break occurs about April 20, bloom about June 10-15 and the total degree days is about 2,900 or less. Griffin noted that Chardonnay is the variety most sensitive to mildew in Washington.

In 1980, grapes for Preston came from the estate and three other vineyards. They include Kiona Vineyard at the south end of Yakima Valley, Sagemoor Farms on the Columbia River bluffs and Balcom & Moe Vineyard near the estate.

When are the grapes picked?

CALIFORNIA

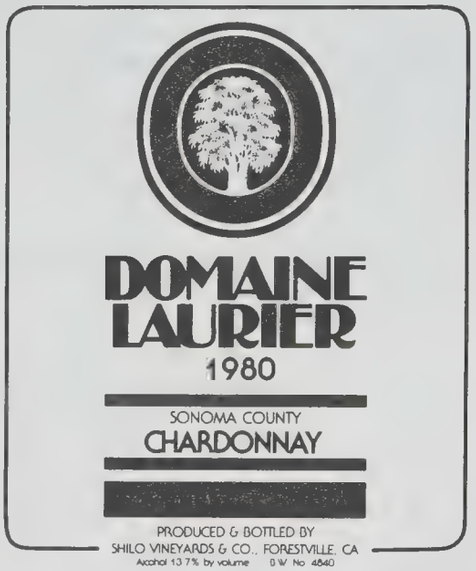
Domaine Laurier's harvest is determined by the comprehensive evaluation of total acidity, pH, Brix and the taste of the grape. Test will walk through the vineyard and taste the grapes to determine when they are ready to be picked.

One of the things that tells Test the vineyard is ripening is the presence of a certain amount of berries, with a muscat-like flavor and very yellow color. The muscat-like flavor, described by Test as ripe Chardonnay flavors, does not carry over to the wine however, notes Test.

Usually grapes are picked around 23° Brix, but sugar is not as important as that the grapes taste ripe. Test does not want grapes above 23° Brix because he does not want high alcohol. Test recalls very high sugar to alcohol conversion rates with '82 grapes, meaning alcohol contents were higher than expected.

"In 1982, our alcohol conversion was higher then we would normally like but that is because we waited until the grape tasted right," says Test. Acids are usually around 0.9-1.0 and the pH, 3.2-3.3.

Stephen Test



Meyers likes to pick **Estrella River** Chardonnay grapes anywhere between 22.5-23.5°, with acids between 0.75-0.80, and pH of 3.3-3.4. "Compared with some other areas, we are getting a little lower acid," says Meyers. "We correct for this in the winery. We could pick at a lower sugar to get the acid up, but I don't think we'd get the varietal character and intensity we like."

Tancer looks at the total picture of **Iron Horse** grape maturity, not just sugar. Taken into consideration is what the fruit looks like, acidity, and pH. "Relative term maturity is quite different here than it is in a warmer growing area," says Tancer.

"It has more to do with length of time on the vine than anything else. If you're talking about the same amount of time on the vine yet the sugar is one to two points lower, you should not be concerned with that lower sugar necessarily."

Tancer notes his area, for some reason, has a very high sugar-alcohol conversion and he must be careful that the wine does not tend to become too high in alcohol from picking at too high a degree Brix. "If we pick at around 23° Brix, we will get around 13.8% alcohol," says Tancer. Because he is looking for alcohol of 12.8-13.0%, Tancer likes to pick Chardonnay at 22-22.3° Brix. Acids are normally quite high, around 0.9, with pH at 3.1-3.2.

Tidwell likes to harvest Chardonnay for **Parsons Creek** at 23° Brix. At 24° Brix or over, the alcohol conversion is too high, even when leaving some residual sugar. Tidwell relates this to the fact he ferments Chardonnay quite cool. "There seems to be a correlation between the temperature at which you ferment at and the retention of alcohol. Because I fer-

ment so cool, I tend to get high conversion rates," says Tidwell. Acids usually are 0.9-1.0 and pH is 3.0-3.2.

A number of factors are considered in **Spring Mountain's** harvest.

Not only are vineyard samples analyzed by taste but there are practical considerations such as winery space, the amount of fruit to be harvested and processed in one day, the availability of tanks and such.

Williams has been trying to maximize the amount of fruit that can be processed in one day by making sure he has enough fermentation space, cellar help, drain tanks and cooling capacity. Harvesting over 400 tons of fruit, a great deal of forethought and planning is necessary.

Williams may start picking Chardonnay at 22.8° Brix, ending up with an average of 23-23.3° Brix. "It depends on how the Brix have developed," says Williams. "Numbers themselves don't tell the whole story, it's how we interpret the numbers in view of the practical aspects, the weather that year and the history of the vineyard." Acids are usually no lower than 0.9 with pH not much higher than 3.3.

Forest Tancer

Trefethen machine harvests Chardonnay at night, usually beginning at 3:00 a.m., bringing grapes into the winery at 55° F. "We like to pick a range of sugars," says Whitehouse, "starting at 22.0, going up to 24.0°. We don't want everything at the same sugar." Acids are usually very good, averaging 0.9, so it is not usually a factor in picking decisions. pH is watched but is rarely higher than 3.3.

ZD harvests Tepusquet grapes on the high sugar side, usually 3-4 weeks later than their Napa and Sonoma grapes, due to their high acidity. They are harvested at 24° Brix or sometimes even over 25° Brix, just to get the acidity down below 1.0.

Carneros grapes are harvested around 23-23.5° Brix at 0.9 acid and Sonoma grapes are usually around 23° Brix and 0.8 acid. ZD does not harvest by pH, though they tend to be around 3.2-3.3.

IDAHO

Ste. Chapelle grapes are picked by taste and appearance. Often a golden hue appears if the weather holds. Grapes come in with 23-25° Brix, 3.5-3.55 pH and 1.3-1.5 acid.

MARYLAND

When **Byrd** grapes achieve a golden color with a minimum of mold, and you can almost see the seeds and veins in the grapes, they are picked. In 1980 and 1981, grapes came in with 23° Brix, 0.7 acid, and 3.1 pH.

NEW YORK

Glenora's goal is 21-22° Brix and clean grapes with 0.9-1.0 acid and a pH of 3.1.

Gold Seal harvest is usually in late September or early October. They pick for sugar, trying for over 22-23° Brix, with sound fruit. Average acid will be 0.9 and pH 3.4-3.5. Grape temperature will be 50-60°F.

Hermann Wiemer's harvest goal is 21-23.5° Brix, with a pH of 3.3 and 0.9-1.0 acid.

Hargrave has a goal of minimum 22° Brix, usually picking around 23° with a pH between 3.1-3.2 and acid of 0.85-0.90. Typical juice temperature is 58°F.

If the weather holds, **Wagner's** goal is 23.5° Brix. 1980 grapes had 24° Brix, 0.95 acid and 3.3 pH. '81 and '82 were 22.2° and 23.2°, 1.07 and 0.95, and identical pH-3.32.

OHIO

Wykoff wants grapes with biological maturity for **Cedar Hill**, but does not want an overripe character. Wykoff's first criteria is 1.0-1.1 acid and appropriate pH. He will accept 18.5-19.5° Brix and chapitalize to 21-21.5° Brix.

"Over 21° can be overripe and a banana character may develop in the ageing wine. Sometimes we get 19-21° with 8.5 acid," says Wykoff.

Markko fruit always reaches 20° Brix or over with a yearly average of 21.5° with acids over 1.0. The '80 vintage was picked at 21° and '82 at 23°.

OREGON

Chardonnay is a late ripening variety in Oregon. Typically, **Amity** fruit is usually picked in the third or fourth week of October. In 1982, some lots arrived in November. There usually is some rain before harvest, and grapes are received between 45-50°F.

Champoeg grapes arrived November 9, 10, 11 in 1980 with an average of 19.6° Brix, 0.96 acid, and 3.29 pH and were chaptalized with two pounds of cane sugar/ton of grapes.

In 1980, on the estate, Draper clone vines were picked November 1 at 19.4° Brix, 0.86 acid, and 3.28 pH. Heat-treated Davis vines were picked November 7 at 18.9° Brix, 1.15 acid, 3.19 pH and chaptalized with 38 pounds of cane sugar/ton.

Eyrie's harvest goal is 22° Brix with 1.0 acid, though sugar between 21-22° is acceptable. Grapes were harvested in 1980 on October 30, at 20.3° Brix, 0.945 TA, 3.31 pH, and chaptalized to 21.5°. Grapes were 58°F upon arrival at the winery. 1982 grapes came in at 22.5° Brix with 0.87 acid, not requiring chaptalization.

RHODE ISLAND

Sakonnet grapes have a high malic acid content. Mitchell looks for a combination of sugar, acid and a pH of 3.0. 1980 fruit came in at 24° Brix, 1.15 acid, and 3.0 pH. 1982 fruit came in at 20° Brix.

"We try to pick grapes in the morning. If we pick in the afternoon, we leave the lug boxes of grapes on the vineyard floor overnight to let them cool down, and crush first thing the next morning," says Mitchell.

VIRGINIA

Meredyth watches Brix and pH closely. '80 grapes came in between 21°-22° Brix, 0.75-0.85 acid, with an average pH of 3.3.

WASHINGTON

Preston grapes are picked typically in the second or third week of October. At picking, some grapes will be translucent. Griffin lets the grapes hang as long as possible to attain maximum sugar before the first freeze which may occur in the third or fourth week of October. All grapes in '80 were picked between 22.5-23.5° Brix, with 0.95-1.05 acid, and 3.2-3.35 pH.

How is the fruit crushed and fermentation conducted?

CALIFORNIA

Grapes for **Domaine Laurier** are picked into half ton bins and crushed and pressed right away with 30-50 ppm SO_2. Press and free run juice are blended together and allowed to settle in stainless steel tanks for two days after which the juice is racked off the solids and inoculated with Epernay-II or French White yeast.

At this time, the juice will either be racked into barrels for fermentation or will start fermentation in stainless steel and be racked into barrels to finish fermentation, or will remain in stainless steel throughout fermentation.

Decisions on how each lot will be fermented are made on a practical basis. Barrels will be filled first, then tanks, and then, as space allows, some stainless steel lots will be transferred to barrels.

1982 was the first year for Domaine Laurier to put some Chardonnay through malo-lactic fermentation by inoculating with ML34 just as the primary fermentation was ending. While acid is rarely added, the malo-lactic lots may require a tweak of tartaric acid to drop the pH into the 3.4-3.5 range.

Fermentation temperatures range from 65-70° F for both barrel fermentation and tank fermentation. "I don't like to ferment cold because the wine tends to develop too many estery, grapefruity qualities and is backwards for some time," says Test.

Once dry, the wines in barrel, if they smell and taste fine, will be left in the same barrel for ageing. Those lots that went through malo-lactic fermentation will receive an SO_2 addition once the malo-lactic has finished and will then be put in barrels. An acid addition may be given after fermentation to give the final wine 0.8 TA. Such an addition will be done as soon as possible after fermentation so the wine does not sit around at a low acid/ high pH balance.

Estrella River adds 50 ppm SO_2 at the crusher. Crushed into a tank, the juice is given about 18 hours skin contact at 55°F, then pressed. Free run and very light press juice is fermented together and the heavy press juice fermented separately. These are kept separate until just prior to bottling.

"We want to hold them separate just as a safety measure, in case there is a great difference in quality," says Meyers. "Though in every case so far, we have found that we can essentially use all the press wine."

Prior to fermentation, the wine is centrifuged to 2% solids and tartaric acid is added to bring the total acid up to 0.9 and lower the pH to about 3.3. Champagne yeast is used and the juice ferments at 60°-65°F in stainless steel.

Right at the beginning of fermentation, two pounds/1,000 gallons bentonite is added in order to add some solids back and to take out some of the proteins. This reduces the need for large amounts of bentonite after fermentation.

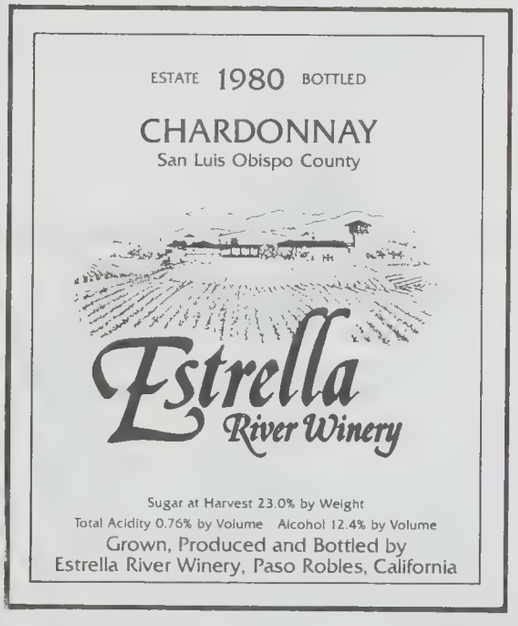
"Our Chardonnay has a lot of fruit-like character, almost to the point of simplicity," says Meyers. "We are trying to do things to minimize the fruity aspects a bit and increase the complexity, such as skin contact and a slightly warmer fermentation."

Iron Horse grapes are crushed into drain tanks positioned over a membrane press and given 12 hours or less skin contact depending on the grapes' temperature. No SO_2 is added prior to fermentation. After pressing, juice is cold settled at 45°F for 24 hours, racked off and inoculated with French White yeast.

Fermentation begins in stainless steel tanks, with press and free run juice fermented separately. Half of the wine will be put into Yugoslavian or French oak uprights at 12° Balling. The other half is put into small French or Yugoslavian barrels at 18° Brix. Barrel fermentation temperatures are 62-63°F and peak at 65-66°F.

Tancer sees barrel fermentation as helpful in achieving two things: to tone down the intense tropical fruit character of the wine through a higher fermentation temperature and the tendency for fruit aromas to volatize, and to add depth and complexity without extracting a tremendous amount of oak flavor.

Tom Myers


ESTATE 1980 BOTTLED
CHARDONNAY
San Luis Obispo County
Estrella River Winery
Sugar at Harvest 23.0% by Weight
Total Acidity 0.76% by Volume Alcohol 12.4% by Volume
Grown, Produced and Bottled by
Estrella River Winery, Paso Robles, California

The wine is racked twice during fermentation for Tancer does not like to leave the wine on the lees at all. "Racking during fermentation is a safe way of protecting the wine from oxidation because of the CO_2 produced by the fermenting juice," says Tancer.

Once fermentation has completed, the wine will sit a week at most and then be put back into stainless steel tanks. SO_2 is added once the wine is dry to prevent malo-lactic fermentation. Once the wine has settled a bit more, it may be cen-

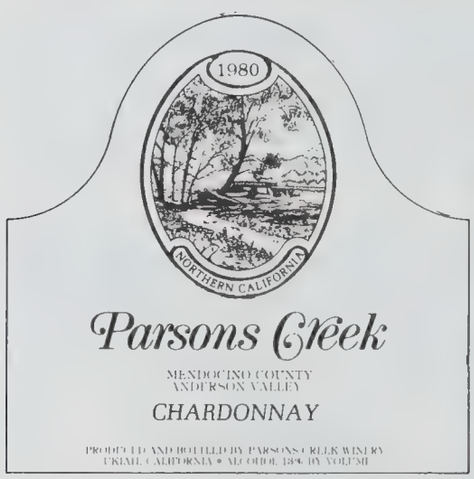
trifuged immediately or racked again and then centrifuged. Centrifugation takes the place of DE filtering later on in the life of the wine.

Crushing proceedures at **Parsons Creek** are unique, as they crush and press in the field. They transport a Mortl crusher and a Howard press into the vineyard. Starting early in the morning, pickers pick and dump the grapes directly into the Mortl stemmer/crusher as it is pulled through the field by a tractor.

In this way, grapes are crushed as soon as they are picked. Between 25-50 ppm SO_2 are added at the crusher, depending on the condition and temperature of the grapes.

Morning grapes are given overnight skin contact in a 3,000 gallon must tank and are pressed in the field the next day. If the grapes are crushed in the afternoon, juice is taken back to the winery immediately after field pressing.

At the winery, juice is cold settled at 38° F. Clear juice is racked off and 90% of the lees are run through a lees filter. The juices are recombined. Once the juice has been cold settled, it is allowed raise to 40° F before being inoculated with Epernay-II yeast. Once the juice has warmed to 50° F, Tidwell will inoculate again.



Jess Tidwell

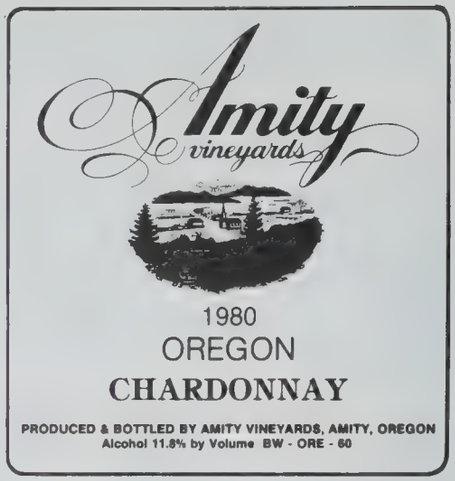
"Rather than wait until the wine is 55° F before inoculating," says Tidwell, "I give it a slug of yeast earlier at 40° F in order to make sure the yeast I want is in there." Fermentation temperature is allowed to get up to 60° F to start a vigorous fermentation. After a drop of a couple degrees Brix, the temperature is brought down to 50-55° F depending on how vigorous the fermentation and the rate of fermentation desired.

When the wine approaches the last 5° Brix, the temperature is brought back up to 60° F. In order to stop the fermentation and leave a residual sugar of 0.5-0.8 in the wine, Tidwell pulls the wine off the lees and adds SO_2 and bentonite. The wine is cooled to 30°F for a few days, causing the bentonite and yeast to fall out, leaving the wine fairly clear.

After two days at 35° F, the temperature will be turned up to 50° F for 10 days and then the wine is centrifuged. There is no barrel fermentation or malolactic fermentation at Parsons Creek.

Spring Mountain adds no SO_2 until after fermentation. Grapes are crushed into a drain tank for four hours of skin contact time or until the press is free. Drain and press juice are combined and pumped into a tank in which the inoculum

Myron Redford



has already been added. Fermentation starts quickly and within 18 hours, or the next day, the wine is racked off the heavy lees. Heavy lees are run through a lees filter. Juice from lees will be recombined after they are evaluated batch by batch. Vineyard lots are kept separate throughout ageing.

At 10° Balling, the wine is put into French oak barrels to finish fermentation. Depending on the acid and pH, certain lots will undergo malo-lactic fermentation. These lots may receive an acid addition after primary fermentation with two thirds tartaric acid and one third malic acid to bring the total acid to 0.95.

Fermentation begins at 53-55° F and is cooled to 40° before being put into barrels. During barrel fermentation, temperatures may peak at 70° F and the wine is usually dry in one week's time.

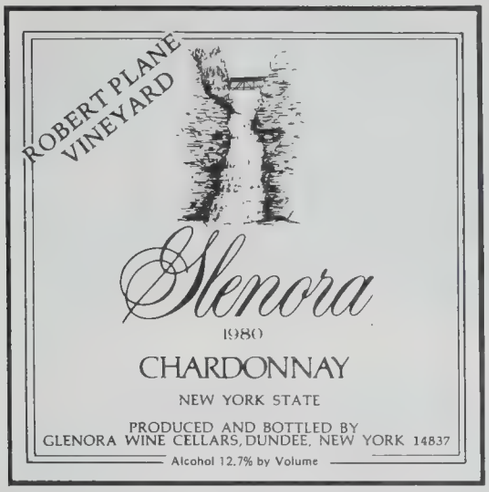
Once dry, the wine will be racked out of barrels and an SO_2 addition of 50 ppm is made. This is the first time SO_2 has been added. The wine will then be racked back to the barrels for ageing. While most of the wine finishes fermentation in barrels, Williams keeps a 'fruit reserve' in stainless steel.

Trefethen grapes are crushed with 50 ppm SO_2. "When you machine harvest, skin contact begins essentially as soon as the grapes are picked," says Whitehouse. "Between machine harvesting, waiting for presses and with the press cycle, we figure the juice has three-four hours of skin contact time."

Grapes are pressed in a tank press. Free run, medium press and heavy press are fermented separately. Different areas of the vineyard are picked on different days and kept separate from one another.

Acid addition to the juice will be made with tartaric acid if the acid is below 0.8 to bring it up to 0.84. Juice is inoculated with Champagne or Montrachet yeast. Whitehouse feels both fermentation characteristics are very similar although, "Champagne tends to make a lighter fruitier style of wine while the Montrachet makes a little heavier, broader, richer style. We like the combination of the two when blending later on."

Fermentation starts at 50° F for three-four weeks and is then allowed to warm up to 60° in order to finish. Once dry, the wine is racked off the gross yeast lees and approximately 4 lbs/1,000 gallons bentonite added for clarification and heat stability. Within a week of bentonite fining, the wine is DE filtered and the free SO_2 raised to 30 ppm. The wine at this point is quite clean and ready to go into barrels.



Mike Elliott

ZD Chardonnay is crushed with 80 ppm SO_2. No skin contact is given though the Tepesquet grapes do have some accountable skin contact time during the seven hour truck ride up to Napa. "Without skin contact, we end up with a fresher, cleaner wine," says DeLeuze. "We have plenty of depth of character in the wines already."

Juice is pressed into a tank and the press and free run are allowed to settle together after which the clear juice is drawn off and inoculated in another tank with Montrachet yeast. Twelve hours after the fermentation gets going, the wine is put into barrels, primarily American and some French, for barrel fermentation.

Fermentation temperature is kept at 50° F in a cooled barrel room. Fermentation can last anywhere from two to three months depending on the nutrients in the wine.

In 1982, ZD wanted some lots of wine to go through malolactic fermentation. Though several different cultures were tried, the wine just didn't go through.

IDAHO

Ste. Chapelle grapes picked at 40-50°F receive 50ppm or more SO_2 at the crusher depending on the grapes' condition. After 24-48 hours skin contact, grapes are sent to a dejuicer and that juice is mixed with the free run juice. Press juice is fermented separately and often is used in a white wine blend.

To help clean up free run juice, a half pound/1,000 gallons of bentonite is misted over the top of the tank and the settlings are centrifuged for juice recovery. Bordeaux Pasteur White yeast is introduced to 55-60°F juice and fermentation is allowed to peak at 65-70°F and is then returned to 55-60°F.

Three-four days after fermentation has begun, PSU-135 malolactic bacteria is introduced. Ten days after the start of fermentation or after a drop of 10° Brix, the wine is racked and returned to the fermenter and the settlings are centrifuged. Tanks may be warmed if necessary to ferment to dryness. Malolactic fermetation may be completed by Christmas or finish in barrels by the following summer.

MARYLAND

Byrd grapes are given no skin contact. Approximately 50 ppm SO_2 are added at the crusher. Juice and lees are stirred up and centrifuged the next day to reduce the solids level.

One-third of the 50°F juice is put into barrels while two-thirds remains in a tank for fermentation. Each lot is inoculated with Montrachet yeast and a small amount of bentonite is added for the yeast to ride upon. Fermentation, which peaks between 55°-60°F, takes two-three weeks.

After fermentation, all lots are blended together in a tank and centrifuged to remove heavy yeast lees. 50 ppm SO_2 are added, the wine settled for a couple of weeks and racked off to another tank to which approximately two pounds/1000 gal of bentonite is added for a minimum of heat stability. Over a 10 day period, the bentonite settles and the wine is racked off. The wine and lees below the racking valve are stirred and centrifuged.

NEW YORK

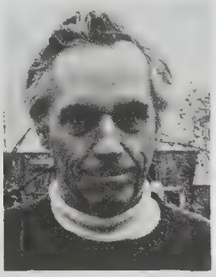
Skin contact is not used at **Glenora**. Clean grapes will receive no SO_2 but grapes in poor condition will receive 30-40 ppm. After pressing, juice is settled overnight and then centrifuged to achieve less than 1% solids.

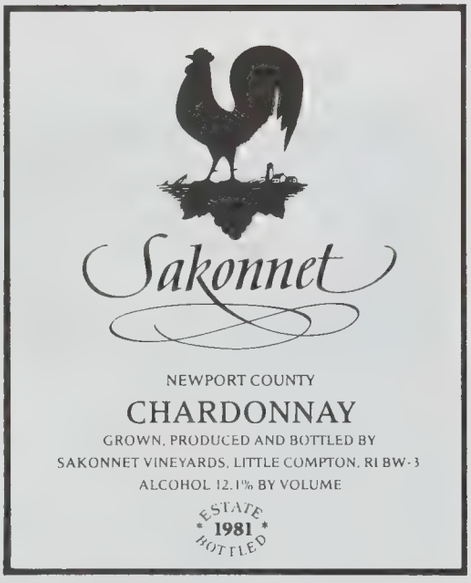
Epernay yeast was used in '80 in a two-three week fermentation between 50-60°F. Upon completion of fermentation, the wine was chilled to 40°F, centrifuged and 50 ppm SO_2 added. Calcium carbonate was then added to lower the acid level. One '82 lot was put through malo-lactic fermentation for a blending experiment.

In 1980, **Gold Seal** grapes were given 16 hours of skin contact for greater phenolic extraction and to increase the fraction of free run juice. Sound fruit receives 50 ppm SO_2, while in '81 and '82 the fruit had mold and received 25 ppm SO_2 and was pressed immediately.

Enzyme is added after pressing to help settling and achieve cleaner, more compact lees. Medium press juice receives one pound/1000 gallons of gelatin to help settling and is then returned to the free run and light press juice.

Jim Mitchell





During settling, which may last two days, the SO_2 level is maintained at 40 ppm free. Gifford prefers to settle the juice but will centrifuge if necessary. Negsulfide yeast from Geisenheim, with no potential of H_2S, is used in the juice with 1/2-1% solids. Fermentation is kept under 60°F in stainless steel for three weeks or longer.

No SO_2 is added at crush to **Hargrave** grapes. Overnight skin contact was given from 1977 through 1981 when the vines were young. With the mature vineyard, minimal skin contact was given in 1982, to prevent making too heavy a wine.

Pasteur White yeast was used on the '80 vintage in tank fermentation at 58-63 °F over four-five weeks. Wine picks up malo-lactic bacteria naturally. At the completion of primary fermentation, if the wine is sound, it is left on the yeast lees in the tank and the cellar is warmed up to help complete malo-lactic fermentation by December 15.

Wiemer grapes in good condition receive no SO_2 at crush. While there was no skin contact given in 1980, Wiemer did try skin contact on some '82 lots. Fruit is pressed with the stems in a Howard rotapress yielding 130-140 gallons/ton.

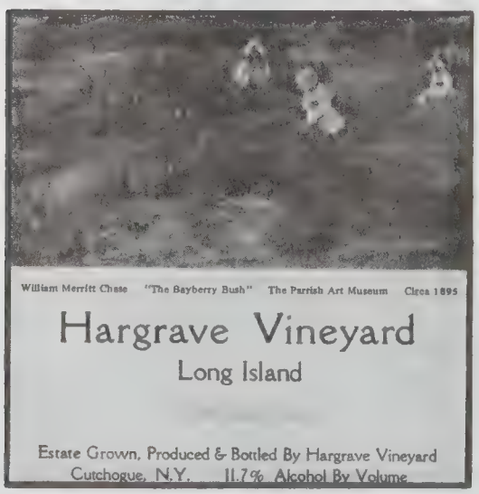
Free run and press juice are settled together overnight, racked off and inoculated with Epernay yeast in tank fermentation which takes two-three weeks with a peak temperature of 65 °F. Barrel fermentation in Limousin barrels was tried with the '82 vintage to gain a better balance and harmony of oak and fruit.

In 1980, **Wagner** grapes were received at 50-60 °F and given six hours skin contact to extract more body into the wine. Grapes were pressed in a tank press with a minimum of stems acting as a press aid. Free run and juice pressed at up to two bars pressure were fermented together. Juice was settled 24 hours before inoculation.

Pasteur White yeast was used in '80, but Chanson has been used since which seems to deliver more of the desired fruit character and ferments cleanly. Fermentation held at about 60 °F in tank takes about two weeks.

OHIO

Cedar Hill, good condition fruit from the Moorhead or Markko vineyards receives no SO_2 when crushed and pressed. Juice is barrel fermented with Pasteur Champagne yeast in reconditioned decharred whiskey barrels and an anti-foaming agent is added allowing the barrels to be filled within five gallons of capacity. Fermentation will start slow in the 65 °F cellar, peak at 70-75 °F and complete in six-ten days.


William Merritt Chase "The Bayberry Bush" The Parrish Art Museum Circa 1895
Hargrave Vineyard
Long Island
Estate Grown, Produced & Bottled By Hargrave Vineyard
Cutchogue, N.Y. 11.7% Alcohol By Volume

Alex Hargrave

Hand harvested **Markko** grapes arrive at the winery between 40-50 °F and are crushed while being loaded into the Vaslin press over a period of several hours and then pressed in a slow program. 40-50 ppm SO_2 is added at crush.

Free run and press juice are settled together, racked off and inoculated with Montrachet yeast. After about four weeks of tank fermentation in a 45 °F cellar, wine and yeast lees are put into barrels, bunged up tight and topped once during the winter. Wine completes primary fermentation and picks up malo-lactic bacteria in the barrels.

About the following June, fermentation locks are put on the barrels and malo-lactic fermentation finishes by September. Wine is racked, SO_2 adjusted to 30 ppm free, and left in barrels until the following summer, being topped every six months.

Archie Griffith

OREGON

Amity grapes in 1980 received no skin contact. In 1982, to make a fuller, richer wine, Redford gave one experimental lot of grapes 24 hours of skin contact. Champagne yeast is used. To de-emphasize fruitiness and improve complexity, Redford allows fermentation to reach about 70 °F during an average seven day stainless steel tank fermentation.

Grapes for **Eyrie** in 1980 were crushed with 70 ppm SO_2 and kept in contact with skins for 24 hours. Juice was then pressed, settled for 12 hours and racked to barrels for inoculation with Champagne 505 yeast which Lett prefers for its compact settling of yeast at fermentation completion.

Free run juice, press juice, and clean settled juice from juice lees are all fermented separately in either three-year-old scraped barrels or five-year-old barrels. Depending on the solids content and amount of inoculum, fermentation to dryness may complete in two weeks or six months.

Starting about ten days after inoculation, depending on the fermentation rate, barrels are topped weekly. The wines pick up malo-lactic bacteria naturally and often complete malo-lactic fermentation when primary fermentation has completed.

When primary and malo-lactic fermentations have completed, the wine is racked, SO_2 adjusted to 20 ppm free and then racked into new oak barrels, if available, for ageing. Malo-lactic fermentation is allowed in order to reduce high acids from 1.3 to as low as 0.9.

RHODE ISLAND

50 ppm SO_2 is added at **Sakonnet's** crusher. In 1980, no skin contact was given. In 1982, ten hours of skin contact was given to extract more depth and complexity from the

fruit before pressing in a new tank press. Juice is settled one-two days and racked before inoculation.

Looking for a yeast to extract more complexities, Mitchell switched from Champagne in 1980 to Chanson for '81 and '82. Fermentation temperatures are kept under 60°F by wrapping the tanks in blankets, wet with 52-55°F well water. After 10-14 days, the wine was consolidated to a smaller tank to minimize headspace. One-two weeks later, the completely fermented wine was racked off the yeast lees and SO_2 level adjusted to 50 ppm.

VIRGINIA

In 1980, **Meredyth** allowed no skin contact and 50 ppm SO_2 was added to the juice after pressing. All vineyard lots were fermented separately in new Blue Grass American oak barrels in a cold room with temperatures in the high 40's.

Champagne yeast was tried in '80, but found to be too vigorous. Epernay and Chanson were tried in '82 to achieve a slower, more controllable fermentation.

WASHINGTON

Preston grapes receive 70 ppm SO_2 at crush and 10-18 hours of skin contact at the grapes' receiving temperature, 45-55°F. Enzyme is added at the crusher to improve pressability and help clarify the juice. Press juice is settled with gelatin and blended back to free run juice for inoculation with Champagne yeast. Fermentation temperature is held to 55°F until 15-12° Brix, and then allowed to warm up to insure fermentation completion.

What is the procedure for barrel ageing, blending and wine cleanup?

CALIFORNIA

Domaine Laurier Chardonnay usually spends two-five months in oak. To determine the exact barrel ageing time, each lot is evaluated and aged according to its particular flavors and balance and how it will fit into the final blend. Test desires a blend with the oak flavors just barely noticeable, balanced with fruit.

Both new and used French oak barrels are used. Often one tank of Chardonnay that was fermented solely in stainless steel will be held out of oak to be used as a 'fudge factor' when blending.

In general, the wine from the two vineyards will be blended together to make one Chardonnay. Blending begins once the wine is out of barrels.

After blending, the wine will receive a bentonite fining followed by a top dressing of gelatin. At the same time, the wine will be cold stabilized at approximately 30° F for a couple of weeks. One week before bottling, the wine will receive a coarse pad filtration. A day or two before bottling, the wine will be polish filtered, followed by a 0.45 micron membrane filtration at bottling.

After fermentation, **Estrella River** Chardonnay is settled for about a week, then centrifuged off the lees. SO_2 is raised to 30 ppm free to inhibit malo-lactic fermentation. After another racking, the wine is fined with bentonite for heat stability, given a semi-cold stabilization at the same time and is then racked off the bentonite lees into oak.

Chardonnay is aged in three types of French oak ranging from one to three years old. Wine is left in barrels for about four months. Essentially, only free-run/light press, accountable for about 80% of the total, goes into small oak while the other 20% of heavier pressings is kept in 1,000 gallon French oak uprights.

"Our Francois Freres barrels are fairly heavily charred; they give that smokey, toasty character," says Meyers. "The Demptos have light to medium toast, and the Marchive have only a very light toast. Demptos and Marchive moderate some of that Francois Freres character which can be a bit too strong for my taste."

After six months in oak, the press and free run/light press are blended together and given a polish filtration. That initial clarification of centrifuging and bentonite fining usually does a good enough job of clarifying the wine so it can be pad filtered without a DE filtration. With a combination of EK pads and membrane filtration, the wine is sterile bottled with 30-35 ppm SO_2.

Meyers likes to give the wine nine-twelve months of bottle age before release and feels the wine is optimally drinkable between two and five years of the vintage date.

All **Iron Horse** Chardonnay is aged in barrels. Yugoslavian and three different types of French oak barrels are used. Wine that was barrel fermented spends less time ageing in oak while wine finished in Yugoslavian uprights will be aged longer in barrel.

Tancer approximates the average time of barrel ageing to be 3-4 months. During barrel ageing, the wine is rotated back and forth from barrel to Yugoslavian and French oak casks in order to let the wine breathe and mature without picking up a lot of oak.

After barrel ageing, the wine is heat and cold stabilized lot by lot. Bentonite is used for heat stability and the wine is chilled to 30°F for approximately 10 days or less until deemed stable by the four hour freeze test. No other forms of clarification are done.

"Because the wines are so low in pH and have already been centrifuged earlier, they tend to clarify easily," says Tancer. After cold stabilization, the wine is given a light polish pad filtration.

John Williams

Tancer begins tasting individual wine lots as they come out of barrel but will not begin blending until late Spring. "The purpose of our blending is: to discount the flashy lots, for there are always some extraordinary single lots, and to try, at that young stage, to put together a blend that is consistent with the Chardonnays we have made in the last few years," says Tancer.

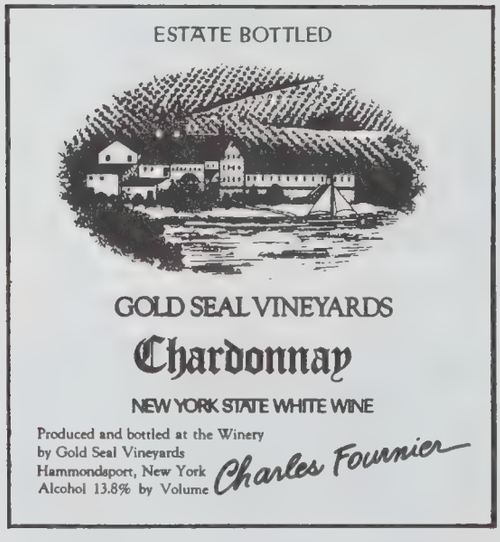
In 1980, two Iron Horse Chardonnays were bottled, a totally barrel fermented lot and a blend of barrel and cask fermented lots.

"We would rather blend wines together and make one Chardonnay but the critical factor is how the wine tastes," says Tancer.

"In 1980, we had two Chardonnays only because the wines were so dramatically different and we could not come up with an acceptable blend of the two."

At bottling, the wine is given an EK filtration. In the past when Iron Horse was using a mobile bottling line instead of their own, the wine would be passed through a .45 micron membrane. SO_2 at bottling depends on pH and oxygen in the wine at bottling. If the wine is 3.2 pH and the oxygen is 1.0 ppm, SO_2 will be added to retain 30 ppm free in the wine.

Parsons Creek Chardonnay is aged in 90% American oak barrels and 10% French oak barrels. Usually, Sonoma Chardonnay averages six months in oak, with the Mendocino lots receiving less oak. Mendocino Chardonnay is the first to be



Jim Gifford

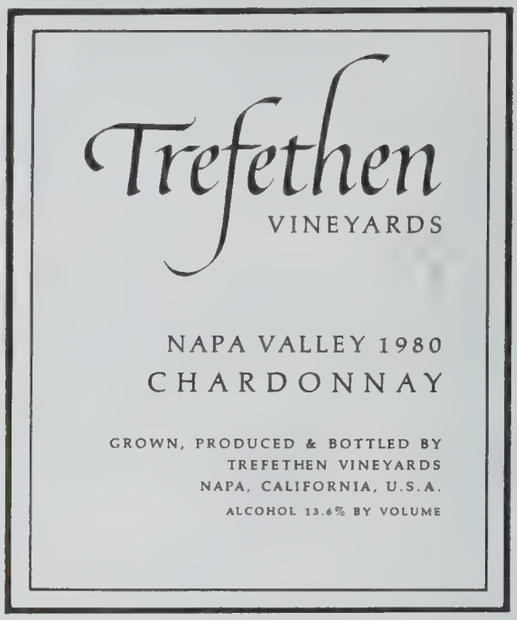
blended and bottled for it is a lighter style. Sonoma Chardonnay is a bigger wine and can handle more oak ageing. It also tends to be a little drier.

After oak ageing, the wines are very clean. They are cold stabilized at 25-28° F for two weeks, blended and given a rough pad filtration before bottling. The final filtration occurs at the bottling line with a 0.34 micron pad.

Because of its early drinkability, the Mendocino Chardonnay is released after one month of bottle age while the Sonoma County is released five months after bottling.

French oak barrels at **Spring Mountain** range from one to five years old. Williams chooses certain lots for certain barrels according to the wine's character. Because certain wines are in newer barrels and some are in older barrels, wines are pulled out at different times once they have developed the desired characteristics from the oak. The average total time in oak is five and one half months.

Dave Whitehouse



Blending procedures are extraordinary in that the decision on the final blend is in no way influenced by the amount of wine made.

"Out of 10,000 cases of Chardonnay," says Williams, "we have never left out less than 2,000 cases. The wine left out was not bad, but because we are looking for the integration and complexity of flavors that will make the best wine possible, we leave out a good deal of wine."

Each lot, pulled out of barrels at a different time, will be bentonite fined, chilled to 40° F and then held in wood ovals or stainless steel until blending. Williams is not afraid to DE filter at any time in the wine's life if there is a problem, such as sulfide. Since Spring Mountain began the practice of not adding SO_2 until after fermentation, sulphide has not been a problem.

The wine normally receives an EK pad filtration and the lots which went through malo-lactic will receive a sterile filtration with a 0.45 membrane prior to blending and bottling.

65% of **Trefethen** Chardonnay is aged in a combination of new and used French Limousin oak barrels for four-six months. 35% of the Chardonnay is kept in stainless steel. Blending takes place in July.

"At this time, we do a lot of tasting in order to be sure of our final blend," says Whitehouse. "Initial tasting decisions are made in November when those wines which are potentially suitable, are set aside for our Chardonnay. The remaining lots are used for our January bottling of our Eschol White Wine."

After the wine is blended, it is cold stabilized at 27° F for two weeks, then DE filtered and blended again. "One blending is not a sufficient guarantee that you will get the same wine in each tank blend, so we feel it has to be done twice," says Whitehouse. Before bottling, the wine is sterile filtered with a plate and frame filter.

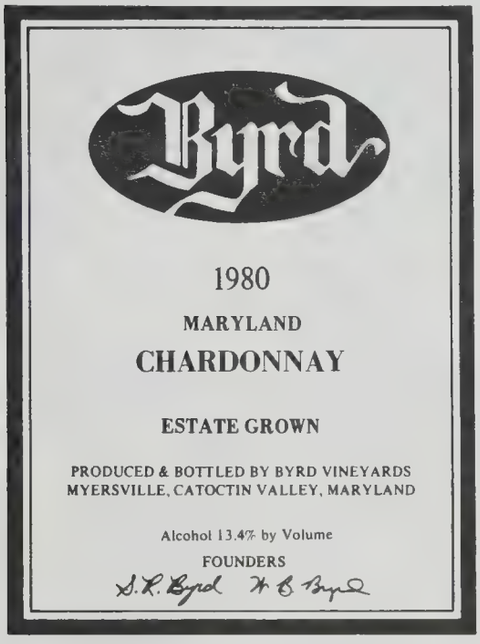
Once dry, **ZD** wine will be racked to tanks, stabilized with bentonite, DE filtered and then racked back into clean barrels. The wine is usually in barrel for a total of 10 months. SO_2 is kept at 25 ppm during barrel ageing. The wine is not

cold stabilized. At bottling, the wine will receive a pad and sterile filtration.

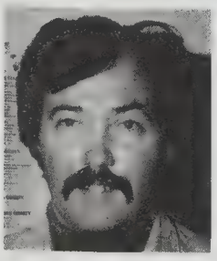
IDAHO

All **Ste. Chapelle** Chardonnay is rotated through Limousin barrels for three-four months or more depending on the age of barrels. Upon completion of malolactic, whether in steel tank or barrel, the SO_2 level is adjusted to 20-25 ppm. Recently, three 3,000 gallon Limousin wood tanks were added to the winery's program for ageing Chardonnay.

When the proper amount of barrel ageing on all wine has been achieved, the lots are blended for acid levels in order to promote longevity in the wine. The wine is centrifuged and receives coarse pad and polish pad filtrations prior to bottling with 40 ppm SO_2.



Robert Lyon



MARYLAND

In 1980, **Byrd** wine was put into new and old 60 gallon Limousin barrels for five months, topped monthly and racked once. Tartrate precipitation occurs during the cold winter. Wine is sterile filtered and bottled with about 20 ppm SO_2.

NEW YORK

One-fourth of the 1980 **Glenora** wine was aged in Yugoslavian oak and blended with non oak-aged wine. Limousin barrels were introduced to the winery in 1981 and Yugoslavian oak is no longer used. A tight pad filtration was done before bottling and 32 ppm SO_2 were added. Acid level at bottling was 0.7-.75.

After fermentation, **Gold Seal** wine is centrifuged, SO_2 is adjusted to 40 ppm free, and settled for a couple of weeks. The settled wine is racked to tanks for cold stabilization at 24 °F for three weeks. Three-four pounds/1000 gallons of bentonite is added for heat stability.

In 1980, wine was loose pad filtered and half the lot was put into new Limousin barrels for four months. Gifford has experimented with other oaks and has chosen Limousin for Chardonnay. Barreled and non-barreled lots were blended together and received tight pad filtration before bottling. Bottled wine was held five months before release.

After malo-lactic completion, **Hargrave** wine is racked to French oak barrels, predominately Nevers, and the SO_2 level is adjusted as needed. Barrel ageing adds complexity to achieve the desired wine style. Only reserve wines are aged longer than six months. Natural tartrate precipitation occurs during the cold winter. Minimal filtration is given to the wine and the SO_2 level at bottling depends on the wine's pH. Wine is released about two and one-half months after bottling.

In order to put clean wine in barrels in 1980, **Wiemer** racked the wine off the yeast lees, settled, and then put the wine into new Limousin oak barrels for four and one-half months. SO_2 was added to 30 ppm free. Wiemer put some '82 Chardonnay in Nevers and Allier barrels to compare differences.

Natural tartrate precipitation occurs in the cold cellar during winter and three-four pounds/1,000 gallons of bentonite is used occasionally to achieve proper stability. A tight pad filtration was followed by a 0.45 membrane filtration at bottling.

Wagner Chardonnay is rough pad filtered after fermentation, cold stabilized at 28° F for 10-14 days and SO_2 level adjusted to 30 ppm. The '80 vintage was barrel aged in new Blue Grass American oak barrels for about three months.

Three pounds/1000 gallons of bentonite was added to achieve heat stability. The wine received a tight pad filtration, a 0.4 micron membrane ahead of the filler at bottling and was bottled with 30 ppm free SO_2. Wine was held five months before release.

OHIO

After completion of primary fermentation, **Cedar Hill** Chardonnay is racked and left on remaining lees until malolactic fermentation completes during the following spring. The malo-lactic bacteria is a natural mixed flora, including pediococcus and leuconostoc, carried over in the barrels. Upon malo-lactic completion, the wine is racked and the SO_2 level adjusted to 30-40 ppm.

Wine remains in Limousin oak barrels until August or longer to gain barrel maturation and is topped every two weeks. Natural tartrate precipitation occurs during winter. Bentoniting for heat stability has not been necessary. The wine receives 0.45 micron filtration ahead of the filler, is bottled with 35 ppm SO_2 and held six months before release.

French and Yugoslavian oak barrels are preferred at **Markko**. Yugoslavian oak puncheons, Nevers barrels, 250 liter German casks, reconditioned whiskey barrels and new Bluegrass toasted and untoasted barrels are used. Ten percent or more of the cooperage is replaced annually. Barrels are on three levels and Esterer gravity racks as much as possible.

After barrel ageing, Esterer makes blends from the different barrel lots, egg white fines with about 20 egg whites/330 gallons and lets the wine settle for six weeks. Wine is polish filtered, bottled with 30 ppm SO_2 and released three months or more after bottling.

OREGON

Amity racks the wine off the lees, allows it to settle for

a week, racks again, settles for a month, and then racks into French Limousin oak barrels. The '80 vintage was in barrels ten months and slightly over-oaked. '81 stayed in barrels six months and came closer to the style Redford desired.

Although inoculated with malo-lactic bacteria during primary fermentation, the wine did not go through malo-lactic. Therefore, the acid was adjusted about 0.1 using calcium carbonate. As the wine had been cold stabilized in cool cellar storage, the minor adjustment in total acidity produced a large shift upward in pH, giving the wine a smoother, rounder feel in the mouth, according to Redford.

The wine was heat stabilized with bentonite, pad filtered and sterile bottled. Redford feels that his leaner style wines need at least one year bottle age before they come together and show well.

Limousin barrels were used for the '80 **Eyrie** Chardonnay. Lett is conducting an experiment with 1982 wines using barrels of five different French oaks, from two coopers, with medium and heavy toast.

Some natural tartrate precipitation occurs in the cold Eyrie cellar. If the wine is very close to protein stability, bentonite will not be added. A DE filtration through a pressure leaf filter is done prior to bottling with 35 ppm SO_2.

RHODE ISLAND

Sakonnet Chardonnay remains in tanks for natural tartrate precipitation in the 25 °F cellar until near the end of February when it may be rough filtered and moved to barrels. The 1980 vintage was barrel aged three months in new French Nevers barrels, bottled with 35 ppm SO_2, and released three-four months later.

VIRGINIA

Upon fermentation completion, **Meredyth** wine is racked into clean barrels. Tartrates precipitate naturally in the cold cellar and the wine is coarse filtered six weeks after fermentation. Wine remains in barrels for the balance of ten-eleven months. About one pound/1000 gal of bentonite is added for heat stability and the wine receives a tight filtration before bottling with 30-40 ppm SO_2.

WASHINGTON

Preston usually puts 60% of the Chardonnay in mixed French oak barrels for an average of nine months and holds 40% in steel tanks. After fermentation, the SO_2 level is adjusted to 40 ppm before being put into barrels. After blending, the 1980 wine received two pounds/1,000 gallons of bentonite to achieve heat stability followed by a polish DE filtration. A pad membrane filtration preceded the filler and the wine was bottled with 25-40 ppm SO_2.

SUMMARY OF CHARDONNAY WINEMAKERS INTERVIEWS Published in **PRACTICAL WINERY**, May/June 1983

WINERY	HARVEST CRITERIA	SKIN CONTACT	YEAST/ FERMENTATION TEMPERATURE	FERMENTATION BARREL	FERMENTATION MALOLACTIC	COOPERAGE	COLD STABILIZATION
Acacia Larry Brooks	23° + Brix	overnight	Montrachet 70-75° F	No	No	Francois Freres	2-3 weeks at 35° F
Chateau St. Jean Dick Arrowood	23-24° Brix 1.0 Acid, 3.0-3.2 pH	24-48 hrs at 35-40° F	Champagne start at 40° F finish at 65° F	partial lot	no	Allier, Limousin, Nevers, Center of France	2-3 weeks at 35° F
Grgich Hills Mike Grgich	grape maturity	none	French White start at 50° F finish at 60° F	partial lot	no	Limousin	no
Kistler Stephen Kistler	23-23.5° Brix 1.0 + acid, 3.0-3.1 pH	24-36 hrs at 60° F	Champagne tank-65° F barrel-70° F	partial lot	yes	Francois Freres	no
La Crema Vinera Rod Berglund	21.5-23.0° Brix 1.0-1.4 acid 3.2-3.3 pH	0-48 hrs	Champagne	yes	yes	Burgundy Bordelais	no
Charles Ortman Charles Ortman	23° + Brix 0.8 + acid under 3.4 pH	none	Champagne 50° F	no	no	Limousin	no
Sonoma Vineyards Rick Sayre	23.5° Brix	0-12 hrs at 55° F	French White 50-55° F	no	no	Limousin Center of France barrels French Oak Yugoslavian Oak tanks	2 weeks at 28° F

CHARDONNAY WINEMAKING SUMMARY

WINERY	HARVEST CRITERIA	SKIN CONTACT	YEAST/ FERMENTATION TEMPERATURE	FERMENTATION BARREL	FERMENTATION MALOLACTIC	COOPERAGE	COLD STABILIZATION
Amity Myron Redford	19.0-19.5° Brix 0.86-1.15 acid 3.15-3.3 pH	none	Champagne 70°F	no	no	Limousin	Natural
Byrd Robert Lyon	23.0 Brix 0.7 acid 3.1 pH	none	Montrachet 50-60°F	yes	no	Limousin	Natural
Cedar Hill Tom Wykoff	18.5-21° Brix 0.85-1.1 acid	none	Pasteur Champagne 65-75°F	yes	yes	Limousin	Natural
Domaine Laurier Stephen Test	23° Brix 0.9-1.0 acid 3.2-3.3 pH	none	Epernay II/ French White 65-70°F	yes	yes	French Oak	2-3 weeks at 30°F
Estrella River Tom Myers	22.5-23.5° Brix 0.75-0.8 acid 3.3-3.4 pH	yes	Champagne 60-65°F	no	no	French Oak	yes
Eyrie Dave Lett	22° Brix 1.0 acid 3.3 pH	yes	Champagne 505	yes	yes	Limousin	Natural
Glenora Mike Elliott	21-22° Brix 0.9-1.0 acid 3.1 pH	no	Epernay 50-60°F	no	no	Limousin	–
Gold Seal Jim Gifford	22-23° Brix 0.9 acid 3.4-3.5 pH	yes	Neg sulfide under 60°F	no	no	Limousin	3 weeks 24°
Hargrave Alex Hargrave	23° Brix 0.85-0.9 acid 3.1-3.2 pH	yes	Pasteur White 58-63°F	no	yes	Nevers	Natural
Iron Horse Forest Tancer	22-23° Brix 0.9 acid 3.1-3.2 pH	yes	French White	yes	no	French Oak Yugoslavian	10 days 30°F
Markko Arnie Esterer	21-23° Brix 1.0 + acid	yes	Montrachet 45°F	yes	yes	Assorted	–
Meredyth Archie Griffith	21-22° Brix 0.75-0.85 acid 3.3 pH	no	Epernay/ Chanson	yes	no	American Blue Grass	–
Parsons Creek Jess Tidwell	23.0 Brix 0.9-1.0 acid	yes	Epernay II 50-60°F	no	no	French Oak & American Oak	2 weeks –
Preston Rob Griffin	22.5-23.5 Brix 0.95-1.05 acid 3.2-3.34 pH	yes	Champagne 55°F +	no	no	French Oak	–
Sakonett Jim Mitchell	20-24° Brix 1.1 acid 3.0 pH	yes	Chanson under 60°F	no	no	Nevers	Natural
Spring Mountain John Williams	23-23.3° Brix 0.9 acid 3.3 pH	yes	Montrachet 40-55°F	yes	yes	French Oak	–
Ste. Chapelle Bill Brioch	23-25° Brix 1.3-1.5 acid 3.5-3.55 pH	yes	Bordeaux Pasteur White 55-70°F	no	yes	Limousin	no
Trefethen Dave Whitehouse	21.5-24.0°F 0.9 acid 3.3 pH	yes	Champagne/ Montrachet 50-60°F	no	no	Limousin	2 weeks 27°F
Wagner Chris Johnson	23.5 Brix 0.95 acid 3.3 pH	yes	Chanson 60°F	no	yes	American Blue Grass	10-14 days 28°F
Herman J. Wiemer Herman Wiemer	21-23.5 Brix 0.9-1.0 acid 3.3 pH	yes	Epernay under 65°F	yes	no	Limousin	Natural
ZD Norman DeLueze	23-24° Brix 0.8 acid 3.2-3.3 pH	no	Montrachet under 50°F	yes	no	Barrels	no

TASTING NOTES

1980 Amity Vineyards - Oregon - 11.8% alcohol

Color: Light straw.
Aroma: Sugary, earthy, soft oak, perfumey, vinous.
Flavors: Light American oak, vanilla, melons, cloves, slight oxidation, watery.
Balance & Finish: Thin, good acidity, high alcohol, astringent finish.
Comments: One taster commented that this wine was not complex, but at least well-proportioned. Another faulted the wine for a medicinal quality which he felt alluded to poor handling.

1980 Byrd - Maryland - 13.4% alcohol

Color: Medium yellow.
Aroma: Slightly hot, grapey, vinous, grapefruit.
Flavors: Chalky, earthy, noticeable V.A.
Balance & Finish: Light body, good acid, dry, crisp, slightly bitter, slightly warm finish.
Comments: Low varietal intensity. One could wish for more body, more fruit.

1980 Chateau Lagniappe - Ohio - 12% alcohol

Color: Medium straw.
Aroma: Complex, some oxidation, some butter, lemony, smokey, vegetal.
Flavors: Vegetal, slight V.A., sour, Limousin oak flavor.
Balance & Finish: Medium body, slightly coarse, acidic, bitter, long full buttery finish.
Comments: A controversial wine, seemingly dependent on each taster's threshold for certain chemical odors that some found unacceptable. Some tasters prized the vegetal component as varietal, while others faulted the wine for possessing the same characteristic. One taster noted that this was a Macon-style Chardonnay.

1980 Domaine Laurier - Sonoma County - 13.7% alcohol

Color: Medium straw.
Aroma: Smokey toasty oak, slightly vegetative.
Flavors: Tart citrusy, grassy, lemony overtones, good varietal fruit, rubbery, complex.
Balance & Finish: High acid, tart, medium body, long and slightly bitter finish.
Comments: Excellent acid and restrained use of French oak combine to present a stylish Chardonnay reminiscent of French Chablis. Some thought it would be a fine food wine, while others felt that it was too aggressively acidic to pair with most dishes.

1980 Estrella River Winery - San Luis Obispo 12.4% alcohol

Color: Light gold.
Aroma: Intense Limousin oak, vanilla, coconut, canned pineapple, very little fruit.
Flavors: Soft, creamy, no varietal fruit, slight oxidation, hint of butterscotch.
Balance & Finish: Medium body, lower acid than most, though well-balanced, short slightly bitter finish.
Comments: Interesting and full-flavored but needs fruit.

1980 Eyrie - Oregon - 12.5% alcohol

Color: Light golden.
Aroma: Heavy alcohol, slightly oxidized, burnt, some SO_2, minty, light butterscotch, slight buttery
Flavors: Light appley fruit, little if any oak.
Balance & Finish: High acid, high alcohol, medium body, slightly bitter and showing it a bit of residual sugar in the finish.
Comments: Somewhat coarse, and the promise of the bouquet is not realized in the taste.

1980 Glenora Wine Cellars - Plane's Cuyuga Vineyard New York - 12.7% alcohol

Color: Pale straw, greenish.
Aroma: Light intensity, apple, minimal oak, slight SO_2.

Flavors: Dry, intense grapey flavor, pineappley, slight SO_2, smokey.
Balance & Finish: Thin, good acid, short finish displaying some residual sugar.
Comments: Good food wine, similar to a very nice Macon.

1980 Gold Seal - New York - 13.8% alcohol

Color: Straw.
Aroma: Flowery, moderately oakey, pleasurable sweetness.
Flavors: Modest fruit, peachy, yeasty, touch of licorice, complex, oak dominates.
Balance & Finish: Thin, very well-balanced, slightly bitter finish.
Comments: Tight structure, good acid, promises long life. Well made, but could use more fruit to balance the oak.

1980 Hargrave - Long Island, New York - 11.7% alcohol

Color: Dark straw.
Aroma: Elegant balance of fruit to oak, mushrooms, slight toast.
Flavors: Ripe melons, limes, lemons, slightly buttery, harsh oak predominates, slightly sweet.
Balance & Finish: Light body, watery, soft sweet finish.
Comments: This would probably make very good Champagne stock but for the harshness of the oak. A coarse wine that may well come around with some more age.

1980 Iron Horse Vineyards - Sonoma County 13.7% alcohol

Color: Medium straw.
Aroma: Almost closed, smokey, earthy, weedy, wildflowers.
Flavors: Light oak and butterscotch, some bitterness, some spritz, reminiscent of a dry Chenin Blanc.
Balance & Finish: Medium body, hot finish.
Comments: The nose delivers more than the mouth, but this wine is not overpowering in any direction.

1980 Markko - Conneaut, Ohio - 11.5% alcohol

Color: Pale straw.
Aroma: Flinty, some wood, slightly toasty, hint of honey, fresh, alcoholic.
Flavors: Appley, tart, weedy, harsh.
Balance & Finish: Thin, very high acid, slightly hot finish.
Comments: Despite the description of this wine as hot and alcoholic, the alcohol is only 11.5%, the lowest of all those tasted. Excellent Chablis-style, if a bit coarse.

1980 Meredyth - Virginia - 12% alcohol

Color: Pale straw.
Aroma: Strong American oak, vanilla, herbaceous, pungent, light varietal fruit.
Flavors: American oak, slightly appley, immature fruit.
Balance & Finish: Soft, clean, high alcohol, good acid.
Comments: Needs more fruit to stand up to the oak.

1980 Parson's Creek - Mendocino - 13% alcohol

Color: Medium gold.
Aroma: Round, moderately intense sweet oak, honey.
Flavors: Slightly sweet and herbaceous, oaky, rich, ripe.
Balance & Finish: Medium body, extremely well-balanced, slight residual sugar is apparent in the warm finish.
Comments: Full and generous with over 1% residual sugar that gives the wine an opulent, fruity impression.

1980 Preston Cellars - Washington - 12.8% alcohol

Color: Light straw, greenish tinge.
Aroma: Floral, rose petals, wildflowers, light butter, candy-like.
Flavors: Riesling-like, citrusy, tart, appley, slight licorice, slightly immature fruit.
Balance & Finish: High acid, full texture, medium body, crisp, tart and slightly astringent finish.
Comments: High acid, but well-balanced, and very reminiscent of a good Vouvray. Unusual, though very pleasant nose that many thought closer to Riesling or Chenin Blanc than Chardonnay.

1980 Sakonnet Vineyard - Newport County Rhode Island - 13.3% alcohol

Color: Deep straw.
Aroma: Perfumey, candy-like, peppery, touch piney, floral, Riesling-like, some oak.
Flavors: Perfumey, oaky vanilla, slightly bitter licorice, interesting.
Balance & Finish: Thin, high acid, dry and slightly astringent finish.
Comments: Fair balance, and perhaps a touch of botrytis to add interest to this well-oaked high acid Chardonnay that reminded more than one taster of Riesling.

1980 Spring Mountain - Napa Valley - 13.4% alcohol

Color: Medium yellow.
Aroma: Slightly hot, vinous, little varietal definition.
Flavors: Little fruit, hint of licorice, austere.
Balance & Finish: Thin, dry, very hot short finish.
Comments: This wine struck most tasters as being too hot and lacking varietal character. Others found it acceptable. No one found it exciting.

1980 St. Chapelle - Idaho - 13.6% alcohol

Color: Light straw with green highlights.
Aroma: Round, apples, melons, pears, papaya, smokey, buttery American oak.
Flavors: Lush, ripe fruit, tart, sweet-sour, touch of oak, slight residual sugar.
Balance & Finish: Viscous, medium body, nice balance, good acid, dry, moderate finish.
Comments: A generous wine in the nose, less so in the flavors. One taster thought it might be too tart to be easily paired with food.

1980 Trefethen Vineyards - Napa Valley - 13.6% alcohol

Color: Straw.
Aroma: Apricot, light toast, weak, varnishy.
Flavors: Lemony, hint of oak, slight ethyl acetate.
Balance & Finish: Medium body, good balance on the high acid side, warm dry finish.
Comments: Pushing the limits of alcohol and acid. Good food wine. Several tasters found the level of ethyl acetate excessive.

1980 Wagner - Finger Lakes, New York - 13% alcohol

Color: Golden.
Aroma: Rich, complex, some spritz, pineapple, good fruit to oak balance.
Flavors: Well rounded, buttery, luscious, ripe, almost sweet, intense.
Balance & Finish: Full bodied, crisp, oily texture, warm finish displaying some residual sugar.
Comments: Big oaky California-style Chardonnay that is spoiled by too much residual sugar in the finish. By far the richest Chardonnay of the tasting.

1980 Hermann J. Wiemer Vineyard - New York

Color: Light straw with green highlights.
Aroma: Fresh green apples, wet wool.
Flavors: Grapey, minty, candy sweet, somewhat oxidized.
Balance & Finish: Thin, high acid, short finish.
Comments: Lacks body and varietal character in the flavors.

1981 Hermann J. Wiemer Vineyard - New York 12.9% alcohol

Color: Very pale straw with green tinge.
Aroma: Almost closed, hint of red apples, minty, burnt, vinous, tired, oxidized.
Flavors: Tart, astringent, spritzy, grapey, slightly sweet.
Balance & Finish: Thin, dry, fair acid, moderate finish.
Comments: Thinner than the '80, with fewer positive attributes.

1980 ZD WINES - 80% Tepusquet Vineyards Santa Barbara - 13.5% alcohol

Color: Medium golden.
Aroma: Rich, intensely oaky with a smokey background, rich varietal fruit, slight varnish, green herbaceous edge.
Flavors: Coconut, peaches, oak, butterscotch, touch of licorice.
Balance & Finish: Oily texture, tart, high alcohol, hot finish of moderate length.
Comments: Big California style Chardonnay for those who like their Chardonnays oaky. Balance suggests it should be drunk soon.

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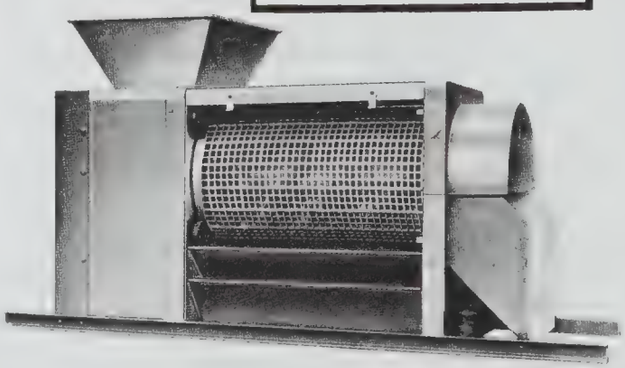

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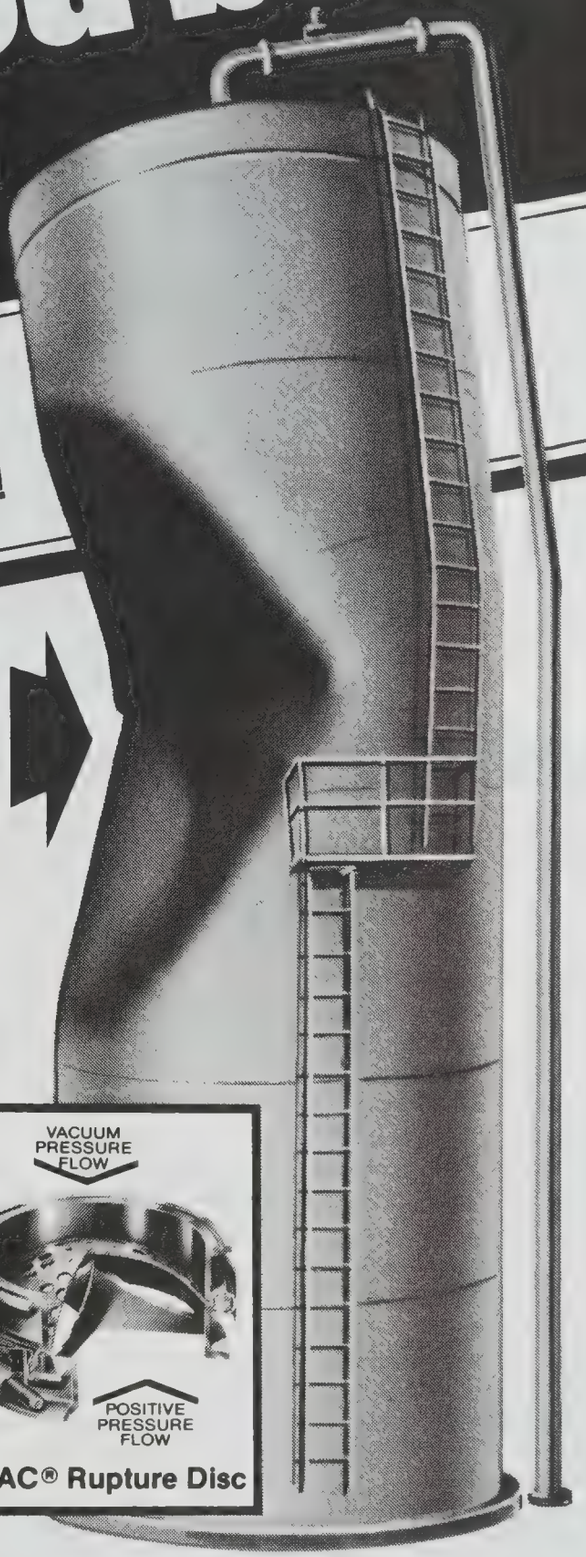

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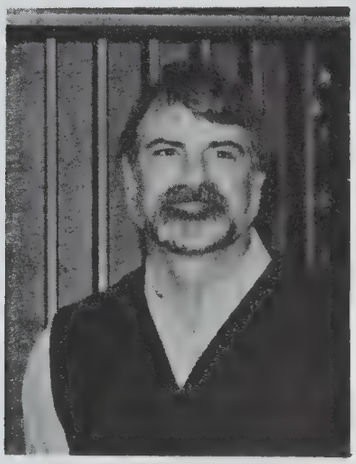
Beginning a Successful Winery: ACACIA

By NANCY LYNN GRAY



Mike Richmond, General Manager, Acacia Winery

If Mike Richmond and Jerry Goldstein had ignored their marketing instincts and followed their heart's desire, Acacia Winery, located in the Carneros region of Napa County in California would be making sweet Rieslings, Muscats and Ports today.

When Richmond began organizing plans for his own winery, those were the wines he wanted to make. But personal fancies took a back seat when it came to establishing a successful business.

Since beginning in 1979, Acacia has become an example to the wine industry of a successful independent California winery starting without a financial nest egg. Producing 20,000 cases of vineyard designated Chardonnay and Pinot Noir (both which sell for a high end price ranging between $12.00-$18.00), Acacia has established their own niche in the marketplace.

Acacia wines sell out every year to premium wine retail shops and restaurants. Every wine newsletter or wine reviewer seems to have mentioned the wines or the winery at one time or another. At serious wine tastings or in off-hand discussions between winemakers, the wines are always a point of comparison.

While Richmond will admit a certain amount of luck is involved, Acacia's position in the industry is more likely due to keen marketing insight and wise money management. Acacia's general partners have expertise and background in wine marketing and business.

Richmond gained a realistic view of wine sales and marketing from working at Freemark Abbey for nine years, first in the cellar and later as director of sales. While working at Freemark Abbey, Richmond met Goldstein (a sincere wine enthusiast), a tax lawyer with a knack for financial planning and a desire to get into the wine business.

In drawing up cash analysis statistics for the winery prospectus, Acacia had the invaluable help of Brad Webb, Chuck Carpy and Bill Jaeger of Freemark Abbey. Also contributing in the initial plans were Joe Cafaro of Keenan Winery and Joseph Phelps of J. Phelps Winery. The greatest guidence came from Brad Webb who was Acacia's founding consulting enologist.

The projected case production climbed from 3 to 4,000 cases, from 6-7,000 to 10,000 cases. "The only way you can have a winery smaller than that is if you have a nest egg," says Richmond. "But when you have nothing, when you have to borrow it all, then you have to be big enough to give a return."

Larry Brooks, Acacia's winemaker, joined the duo when he met Richmond and Goldstein at a dinner party to capture another investor for the winery project. Originally, Richmond was to be the Acacia winemaker and Brooks, his assistant, "but it soon became apparent that he was a lot smarter than I," says Richmond. "He has a gift for research and a feel for wine."

The final prospectus was for a 10,000 case winery to be built in the Napa Valley with potential for vineyard acreage, solicited as a limited partnership of 42 units at $30,000 each, with an equivalent amount to be loaned by the bank. "We had this fantasy that some individual was going to swoop in and buy up half the units," recalls Richmond. But such was not the case. By May of the year planned for first crush, Acacia had only half of the investors needed to make the winery a possibility. The original intention was to return the money to the investors but instead they came up with an alternative plan.

Unable to crush in their own winery, they rented floor space at St. Francis Winery in Sonoma Valley, a winery not up to full capacity. Acacia set up their own equipment (purchased with a bank loan) and crushed both 1979 and 1980 vintages as tenants. This plan, which originated out of necessity, allowed the business to start producing a product while continuing to add investors, one by one.

Richmond explains the reason for the slow accumulation of investors as quite simple: investments in wineries, even successful wineries, do not pay off in the short term. They are long term investments. "The wine industry is such that it does not promise a huge return. Accordingly, some view it as a recreational investment," adds Richmond.

"Of the 1,500 people we approached, 1,000 had the money, but the investment just did not appeal to them. People were straight forward. They would tell me, 'Hey, Mike, I make investments to make money. Even if your winery does as you project it to, I still will only make a little bit of money'."

Tight money management and a healthy attitude towards change pulled Acacia through those first three years. In 1981, they had the financial backing to begin building their own winery. Richmond explained how strung out any new business can get by not having the money to pay for the very

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materials needed to produce a product, yet needing to sell the product in order to make the money to pay for the materials.

"Everyone eventually gets paid," says Richmond, "it's deciding who gets paid first. The successful entrepreneurship is managing all the Catch-22 situations you can possibly get into, which starts at the very beginning. No matter what the business is, if it is well thought out and well managed, it will succeed."

Part of plotting out a business is establishing a clear identity in the market place. "One of the most important aspects of starting a business is knowing who you are and establishing a style right from the beginning," persists Richmond.

Acacia's image took seed when they found the winery property in Carneros. Because this area was known for production of Chardonnay and Pinot Noir, the relationship to the Burgundy region of France could not be ignored. Thus sprung the image of a California winery producing only Pinot Noir and Chardonnay in the style and tradition of Burgundy. The decision to produce Pinot Noir as opposed to Cabernet Sauvignon, a varietal much more in market demand, might be considered unwise.

"I had no misconceptions about producing Pinot Noir after trying to sell it at Freemark Abbey," recalls Richmond. "We saw the potential for Pinot Noir from Carneros in the wines of Carneros Creek and ZD, yet we knew this potential was not recognized by the market.

"Still, there was an advantage in making Pinot Noir as opposed to Cabernet; there are already many fine Napa Cabernets. But if we could make a better Pinot Noir, we could be a big fish in a little pond."

The intention was to duplicate Burgundian Pinot Noir. The winemaking philosophy, vineyard and cellar practices, barrels and packaging are all based on this concept. Incorporated in this philosophy, is the making of several Chardonnays and Pinot Noirs of individual vineyard designation. As in Burgundy, each wine represents a certain vineyard area.

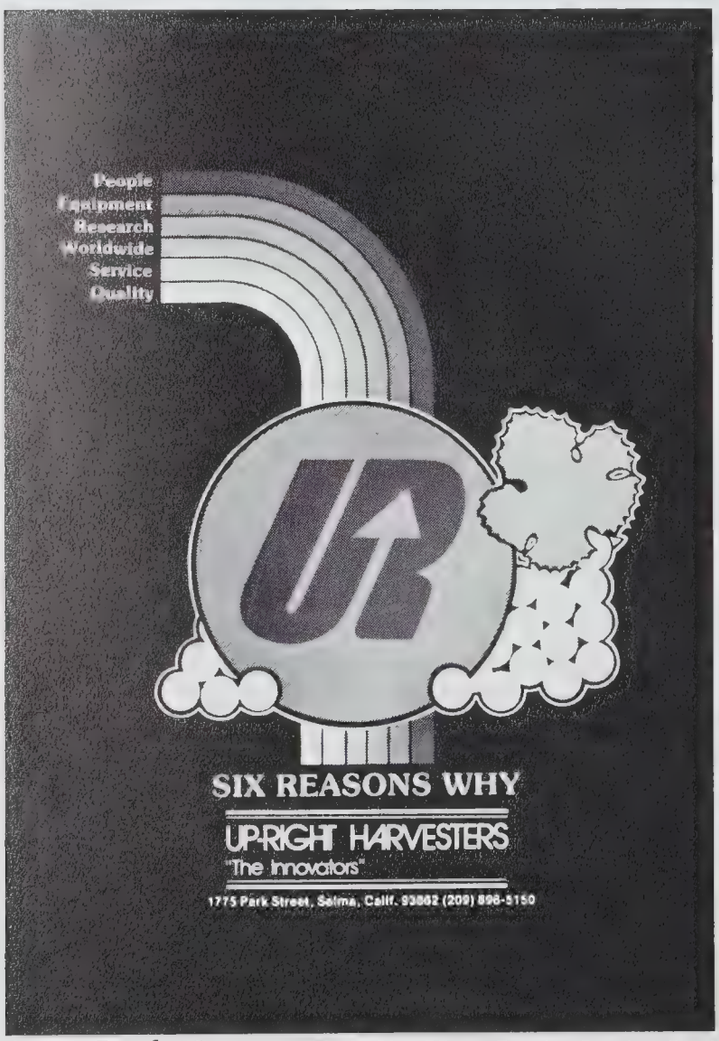
Another strict belief of the Acacia philosophy is that the winemaker be totally involved and constantly aware of what is happening with the wine on a daily basis. "It is important that all of us, but especially Larry, be up to our elbows in wine," says Richmond.

For that reason, Acacia will produce only 20,000 cases annually. To produce any more, the winemaker would have to delegate duties to others, losing the hands-on contact with the wine and only be able to analyze individual wines periodically in the laboratory.

It should be made clear that while Acacia at one time was trying to actually duplicate Burgundy, they are now only trying to make distinctive, vineyard designated Pinot Noirs in the style of Burgundy. Chardonnays on the other hand, have always been made in a California style.

How Acacia has chosen to package the wine smacks of Burgundy as well. With French dead-leaf green glass, a classically clean, simply stated label, a vintage neck label, and either a yellow or burgundy lead foil capsule; at a skimming glance, one might very well mistake the wine to be a French Burgundy. If not consciously, then perhaps subconsciously.

"We knew exactly what we wanted in our packaging," says



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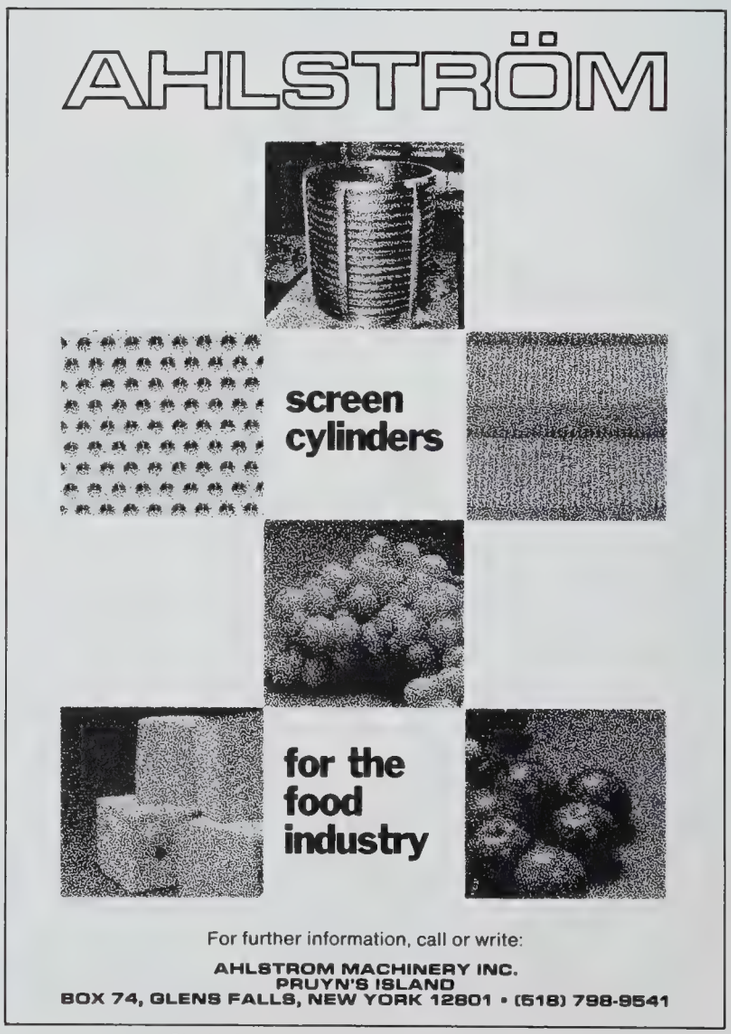
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Richmond. "We wanted to achieve confidence, a subliminal confidence in the product. We wanted somebody to reach over and pick this up and not know why he picked it up, but he just had confidence that with a package like that, it just had to have a good wine in it."

When it came to the label, the design they wanted was so simple, the artist had an incredibly hard time coming up with an adequate sketch. Rejecting draft after draft, they shuffled through about fifty Burgundy labels, picked out three and worked out a variation on the theme which seemed to run through all of them.

"Finally, we wrote out specifically and exactly what we wanted the label to look like," recalls Richmond, "how and where the winery name would appear, what words went where, where the neck label should be positioned." From there, the artist came up with the present label saying, "But this is an archaic design," and we replied, "Yeah, we know."

An explicit example of Acacia's uncompromising standards when it comes to their product is the value they see in buying real French glass, though lower priced adequate substitutes exist. They have been approached by glass companies who have offered to sell them glass which resembles the French dead-leaf green bottle they are now using, "but the French glass is what we want," says Richmond.

"If we compromise and say, 'well, we can save $10,000 and no one is really going to be able to tell the difference', then that bottle (the copy) has become our standard of comparison. Then, someone else brings us another bottle and we say, 'well, there is hardly any difference', and before you know it, you're way down the road.

"The same thing can happen to your wines. If you are not real careful, this slow change can slowly erode away the quality and standards of your winemaking. You don't compromise quality because you think the customer won't notice the difference; you assume that the customer will always notice the difference, and in fact, he does! He may not be able to tell you why he does not like that wine anymore—he may not see it—but his mind's eye sees it."

Perhaps it is this subliminal customer appeal, the confidence silently shouting from the package, that entrances consumers to look past the price tag and buy these wines. While not grossly over-priced, Acacia's wines are definitely on the high end of the California wine pricing spectrum.

From the beginning, Acacia knew they would have to demand a high price for their wines due to the initial expenditures and their insistance on the highest quality in all materials, from grapes to new barrels, glass and equipment. "When you are asking top dollar, you cannot afford to scrimp on these things," says Richmond. "Pricing is intuitive, but first you start with the facts. You cannot project a 10,000 case winery at cheap prices and pay the bank!" Before pricing the wines, they were aware of what was happening in the market and where their wines would fit into that market."

"If you don't have a lot of experience in the market, you have to sit down and do a comparison tasting with what is available and put into your mind's computer, the quantity of wine you have, the type of package and projected appeal that package will have, how broadly you want to distribute the wine, what the competition tastes like, how old or new you are, where you want to be next year and in five years,

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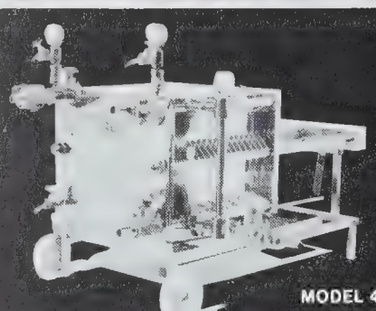

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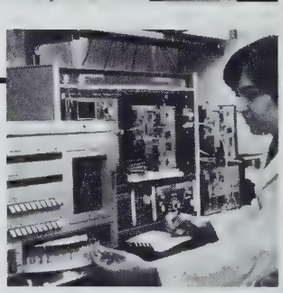

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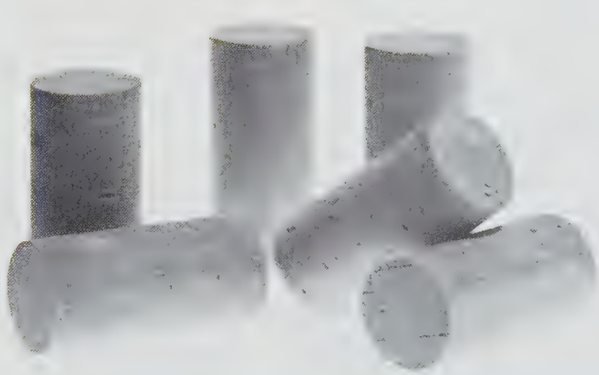

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how much wine you are going to have to sell next year and how much you sold last year," summarized Richmond.

While Richmond says he really doesn't know why the wines sell so well at these prices, it seems to be in keeping with Acacia's ability to assess the market, define a goal within that market and not be afraid to change that goal in order to thrive in that market.

From the winery's conception, Acacia's plans and ideas have been turned around, having to constantly change or adapt. They always had a plan, but they were not fixed to one divine plan without variation.

"Have a goal at all times, but do not have a problem with changing that goal," notes Richmond.

"Always, in the back of your mind or in the front of your mind, you have the market in mind. Parallel to the goal and image of the winery you are building, you must have a vision of the market and your identity right out there with it. You don't try to buck the market; you service the market."

So, Acacia isn't making sweet Rieslings, Ports and Muscats, though they would have liked to, and they are making twice as much Chardonnay as Pinot Noir, though they would rather do just the opposite. Their winemaking aspirations have not clouded their business sense.

"There are certain realities you approach with your eyes open," concluded Richmond, "and you cannot let your ego get in the way of the realities of life."

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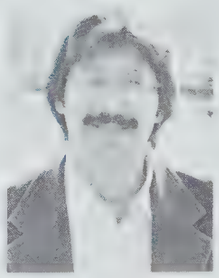

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Understanding and Controlling pH and TA

By JAMES VAHL

Winemakers are becoming increasingly aware of the importance of pH in many areas of winemaking. For example, the effectiveness of sulfur dioxide, the growth of both desirable and undesirable micro-organisms, resistance to oxidation and red wine color are all affected by pH.

This presentation will assume that the winemaker is already aware of the many ways in which the pH of juice and wine can affect the properties of his wine and will concentrate on the relationship between pH and titratable acidity (TA), with special emphasis on those factors which are important in making pH and acidity adjustments.

WHAT ARE pH AND TITRATABLE ACIDITY?

pH and TA measure quite different properties of juice and wine solutions.

pH is a measure of the concentration of hydrogen ions in solution. In precise chemical terms, it is defined as the negative logarithm of the hydrogen ion activity.
From the practical viewpoint of the winemaker, it is less important to know the definition, than it is to know that it is the concentration of hydrogen ions as expressed by pH which affects wine color, sulfur dioxide effectiveness, etc. pH is a property of a solution which can be measured directly, using a pH meter.

On the other hand, TA is not a direct property of a wine or juice, but is rather a number which is obtained under a defined set of analysis conditions. Although TA is expressed in terms of tartaric acid, it has no direct relationship with tartaric acid concentration.

TA measures the amount of base which is required to neutralize a wine or juice sample to a given pH endpoint and expresses this number as though the solution being tested were a pure tartaric acid solution, which is obviously not the case.

TA is valuable to the winemaker because the number obtained depends on both the starting pH of the solution and the total amount of acid present. Our tongue reacts to acid solutions in a similar manner, and we perceive sourness depending on both the amount of acid present and the pH. Thus TA provides an analytical value which roughly approximates acid taste.

RELATIONSHIP BETWEEN pH and TA

When a grape acid such as tartaric acid is dissolved in water, it releases hydrogen ions, lowering the pH until an equilibrium is reached between the hydrogen ions in solution and the hydrogen still attached to the acid. An acid which releases more hydrogen ions at the same concentration than a second acid will give a solution with a lower pH and is said to be a stronger acid than the second acid.

If the acid solution is then titrated with a base, some of the hydrogen ions are neutralized to form water, the pH rises and more hydrogen ions are released. If the titration is carried out to a sufficiently high pH, for example the value of 8.2 or so which is common for TA determinations, then all of the hydrogen will have been neutralized during the titration. The amount of base consumed will depend on the total amount of hydrogen and thus the concentration of acid originally present.

During the growing season, the grapevine synthesizes among other things: tartaric acid, malic acid and citric acid, and these accumulate in the cells of the berry. At the same time, part of the hydrogen ions which are released by these acids are exchanged with potassium plus a small amount of sodium through the cell membrane (1).

In effect, the grape titrates the acids with potassium, a base. This can be thought of as the start of a TA determination of a pure acid mixture which is later completed by a chemist in the laboratory. Although there is almost always a reduction in the level of malic acid during maturation, this potassium-hydrogen exchange would result in a rise in pH and a drop in TA during ripening even if the acid levels remained constant.

You can see that for a single acid, tartaric acid for example, at a given pH value we could predict the TA for a given total amount of acid if we knew the way in which the pH changed during the neutralization or titration.

Fortunately, this relationship can be expressed with equations using pKa's or equilibrium constants which have been experimentally determined for the individual acids. It is somewhat more difficult to do the mathematics for a mixture of different acids, but using a small computer, these calculations can be done.(2)

The way in which pH and TA are related for a mixture of acids such as might be found in mature grapes is shown

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in Figure 1. At a desirable maturity where the pH is 3.35 and the TA is 9 g/L, about 30 to 35% of the acids have already been neutralized. The TA thus represents only 65 to 70% of the total amount of acid actually in the juice.

For juices or wines with higher pH values, the TA will be a proportionally smaller percentage of the amount of total acid, and for juices or wines with lower pH values, the TA will be a higher percentage of the total acid amount.

If no potassium-hydrogen exchange had occurred during maturation, the pH inside the berry would have been close to 2.0, a condition so acid that most enzyme systems cannot function!

PRACTICAL CONSIDERATIONS WHEN MAKING ACID ADJUSTMENTS

When making acid adjustments, the winemaker must keep a number of important finished-wine properties in mind:

- pH
- acid taste
- heat and cold stability
- microbiological stability

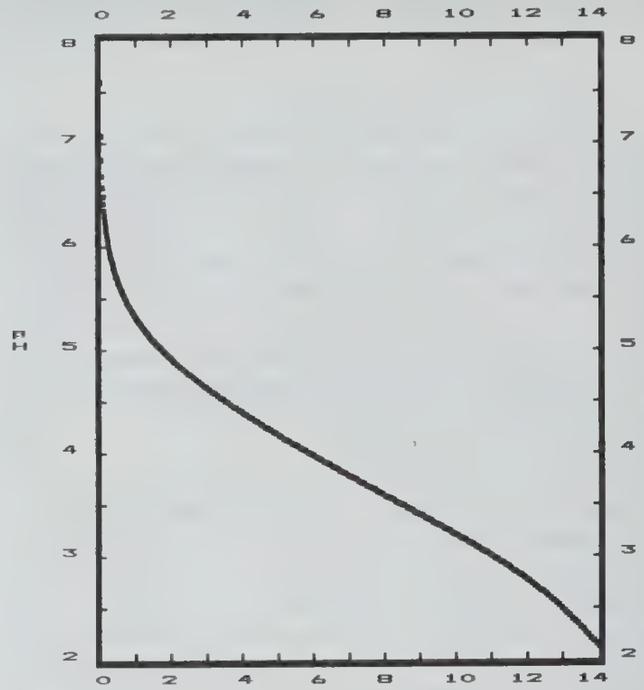
In addition, he must make sure that any adjustments are within the appropriate legal limits.

Since TA and pH are interrelated, any adjustment to affect either of these juice or wine properties will affect the other. When striving to change the pH or improve the taste balance of his wine, the winemaker must consider all the consequences of the adjustment. The rest of this article provides some guidelines to follow and precautions to be observed when making acid adjustments.

The pH-TA Relationship is a Straight Line in the Normal pH Range

While not absolutely correct, this is true for all practical purposes. The slope of this line for a mixture of tartaric and malic acids depends on the ratio of the concentrations of the two acids, and the intercept depends on the total amount of acid present.(3)

Figure 1: pH-TA RELATIONSHIP FOR A TYPICAL JUICE



Thus, if the potassium level of a must is known, the tartaric and malic acid concentrations can be calculated from a simple straight line equation if the pH and TA have been determined. Similarly, if the tartaric/malic ratio can be estimated, the potassium level can be calculated.

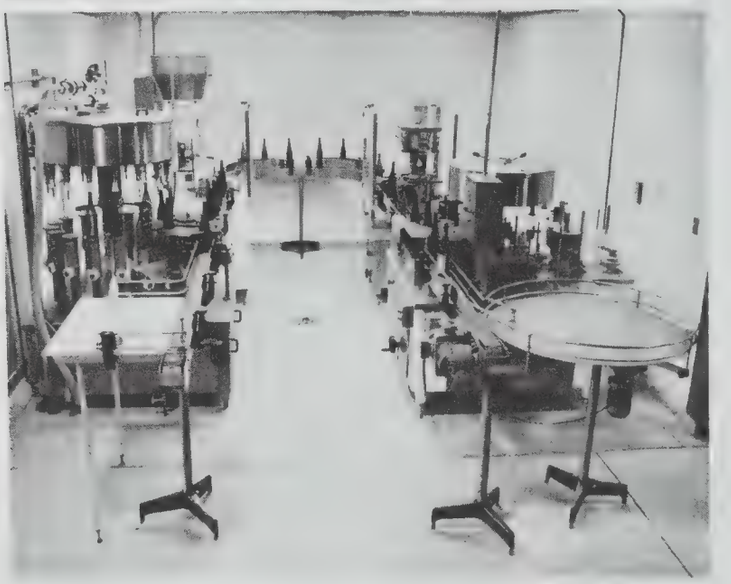
Furthermore, with the exception of extreme changes, pH will change linearly with TA for acid additions or deacidifications. For the addition of a strong acid (hydrogen ion-exchange is the only legal way to do this) or the addition of a strong base such as potassium carbonate, a rule of thumb for juices is that the pH will change about 0.2 units for each 1 g/L change in TA.

For tartaric acid additions, where not all of the acid is effective the pH change per TA change depends on the concentration of acids in the sample and the results will be different for those musts with acid levels higher or lower than normal.

The departure from linearity for high addition levels will be in the direction of smaller and smaller pH changes for the same acid addition amount since the effectiveness of the acid will decrease with lower pH and at the same time, the total amount of acid will be higher and higher, thus also lowering the slope of the pH-TA equation.

TA Increases are Proportional to the Equivalent Weight of the Acid Added

Of the acids which might be added to wine, tartaric, malic and fumaric acids have two acid groups per molecule, citric acid has three and lactic acid has one. The amount to add depends on the relationship of the equivalent weight of the acid to be added, obtained by dividing the molecular weight by the number of acid groups per molecule, to the equivalent weight of tartaric acid. All of the hydrogens of the added acid show up in the TA, regardless of how strong or weak the acid may be.



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The following table gives the amount of each acid which must be added to raise the TA by 1.0 g/L:

Acid	Molecular Wt.	Equivalent Wt.	Amount to Add g/L	Amount to Add lbs/1000 gal
Tartaric	150.09	75.04	1.00	8.33
Malic	134.09	67.04	0.89	7.42
Fumaric	116.07	58.04	0.77	6.44
Citric	192.13	64.04	0.85	7.11
Lactic	90.08	90.08	1.20	10.00

Solutions of Stronger Acids have Lower pH Values

As mentioned above, wine and grape acids vary in strength. This has importance in two areas: the effect of grape composition on pH and the effect of the type of acid added on pH.

Tartaric acid is stronger than malic acid. This can be seen in the titration curves for equal molar amounts of the two acids in Figure 2. For the same amount of acid and the same amount of neutralization, tartaric acid always has a lower pH than malic acid, in this case about 0.45 pH units in the wine pH range.

Tartaric and malic acids make up about 95% of normal

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grape acids, so the absolute and relative amounts of these two acids plus the potassium level almost entirely determine grape TA and pH.

The practical result is that for grapes with the same total amount of acid and the same potassium level, those having a higher tartaric/malic ratio will have a lower pH than those with a lower ratio. If the wine undergoes a malolactic fermentation, high levels of malic acid will of course also result in a greater pH increase during the ML fermentation.

If the winemaker wants to achieve low pH levels, he should seek out grapes with both a high tartaric/malic ratio and relatively low overall acid levels.

When making acid additions to must or wine, stronger acids will give lower pH's at the same acid addition level, even though the TA increase will be the same.

As an example of this effect, consider adding enough acid to a wine of normal compostion, pH = 3.43 and TA = 6.9 g/L, to give a TA increase of 1.0 g/L. If tartaric acid was used, the resulting pH would be 3.28. If malic, citric or lactic acids were used, the pH would be 3.34.

It is interesting that the effect of these three weaker acids is essentially identical, within 0.004 pH units, even though their chemical structures are so different. In each case, the TA of the acidified wine (before and bitartrate precipitation, if any) would be 7.9 g/L.

Stability Considerations

Occasionally, winemakers want to make an acid addition to final bottling blends, just prior to bottling. If tartaric acid is used for this adjustment, there is always the risk of adversely affecting the wine's cold stability.

THE MILES ANSWER MAN

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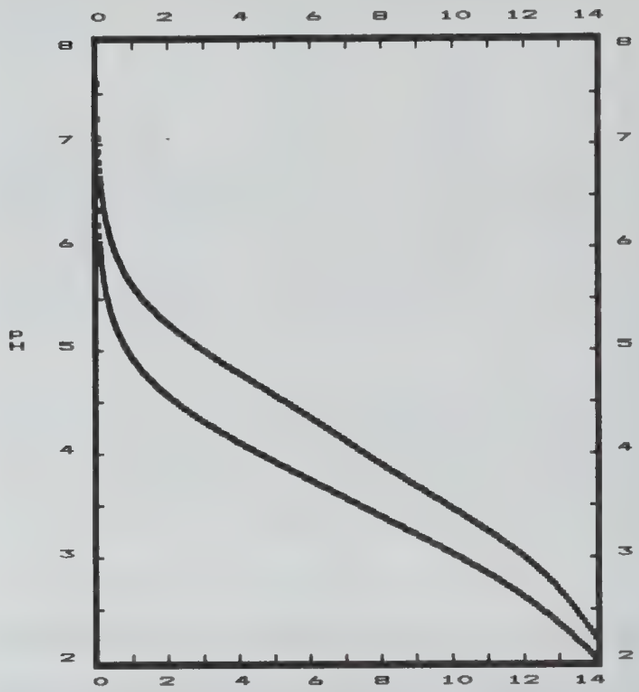
Figure 2: pH-TA Curves for Equal Amounts of Acid
MALIC ACID (Upper) TARTARIC ACID (Lower)



Stability depends on the concentration product (CP) between potassium and the bitartrate anion, and increasing the tartaric acid concentration will increase the CP. It is preferable to use another acid for any adjustments after the wine has been cold stabilized.

pH effects on wine stability should also be kept in mind when making any acid adjustments just before bottling. If the pH is brought closer to about 3.7, the pH of maximum bitartrate anion concentration, then there is a possibility of causing tartrate instability, even if no tartaric acid has been added. Adding a potassium salt to raise pH or reduce acidity is doubly dangerous, since the potassium level would be raised as well.

Stability of wine proteins is pH-dependent, so acid adjustments can also produce heat instability problems in some wines.

It is best to avoid late acid adjustments altogether. If a prebottling adjustment must be made for whatever reason, it should be as small as possible, and tartaric acid should not be used.

Although presenting problems in finished wines, potassium bitartrate instability can be used to advantage in adjusting wines prior to stabilization. If lowering the pH of the wine is the main concern, using tartaric acid for this purpose will give the largest pH change per TA increase, since a portion of the added tartaric acid will precipitate out as potassium bitartrate.

The amount of reprecipitation cannot be predicted with confidence (see below), but will generally be highest for wines with high potassium levels and with pH values approaching 3.7.

Addition of any other acid will permanently raise the TA by the amount of acid added, and this presents a taste balance problem for most high pH wines.

Microbiological Stability Considerations

Presence in a wine of malic acid at levels of 0.1 g/L or

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higher presents some risk of malo-lactic fermentation. The severity of this risk depends on a number of factors too numerous to describe here. In any case, addition of malic acid to red wines which have completed ML fermentation certainly creates the chance for a second, most probably undesired ML fermentation.

Addition of malic acid to musts or wines in which ML fermentation is desired and expected is equivalent to adding a mixture of malic acid and lactic acid to the finished wine and is recommended only to those winemakers who fully understand what the result will be.

Keep in mind that commercial malic acid is a racemic mixture of the D and L forms. Only the L-isomer is active microbiologically and is detected enzymatically, although both forms will be detected by paper chromatography or HPLC analysis.

Analysis of a wine to which malic acid has been added and which subsequently underwent an ML fermentation will show no malic acid if done enzymatically, but will show the residual D-malic acid by paper chromatography or HPLC.

Caution must also be taken in the use of citric acid. The previous taxonomic name for *Leuconostoc oenos* (ML-34, PSU-1, etc.) was *L. citrovoru* which means literally 'citrate eater'. ML fermentation in the presence of high levels of citric acid can give unpredictable results, and the addition of citric acid to wines which are to undergo a subsequent ML fermentation should be avoided.

Early or Late Adjustments?

Most winemakers seem to feel that acid adjustments should be made as early as possible. There are very good reasons to avoid late adjustments as mentioned above. There also seems to be good evidence that higher pH levels encourage the growth of undesirable ML organisms and can lead to less satisfactory ML fermentations.

But there are some good reasons not to make acid adjustments too early either. The cold stability of wines cannot be predicted very well, especially with red wines, because of the presence of 'complexing factors' which cause the actual stable CP values to be far higher than the expected theoretical values. Thus, although the final pH values of wines can be predicted fairly well from juice compostion, the TA's cannot (2), and there is the chance that the finished, stabilized wine will be more acid than expected or desired.

My recommendation is to make a conservative acid adjustment to the must, no more than 70 to 80% of what is determined to be the amount needed. Most of the favorable effect of a lower pH on ML fermentation and whatever other factors the winemaker feels are affected will be accomplished, yet flexibility is maintained for those wines which do the unexpected. Final adjustment should be made after ML fermentation, if this is to be carried out, and before the wine is stabilized. Submitting the lab blend to the cold stabilizing conditions at this point will give a good indication of finished wine acidity.

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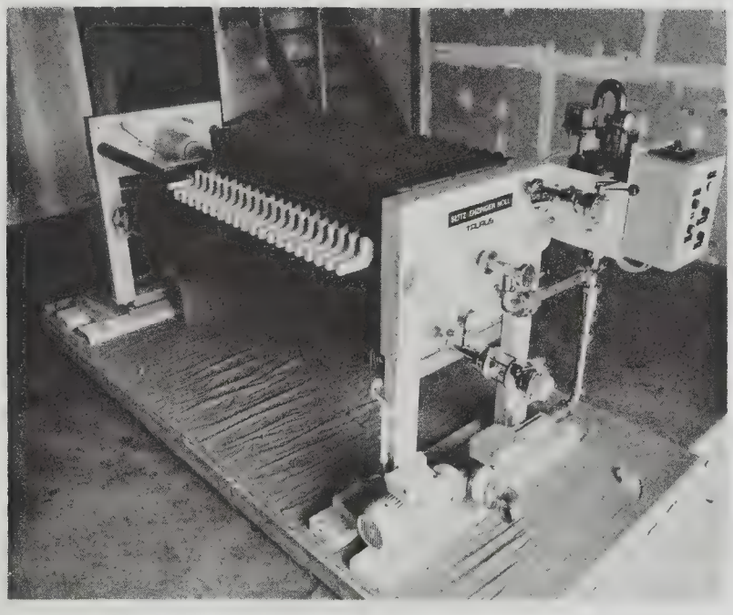

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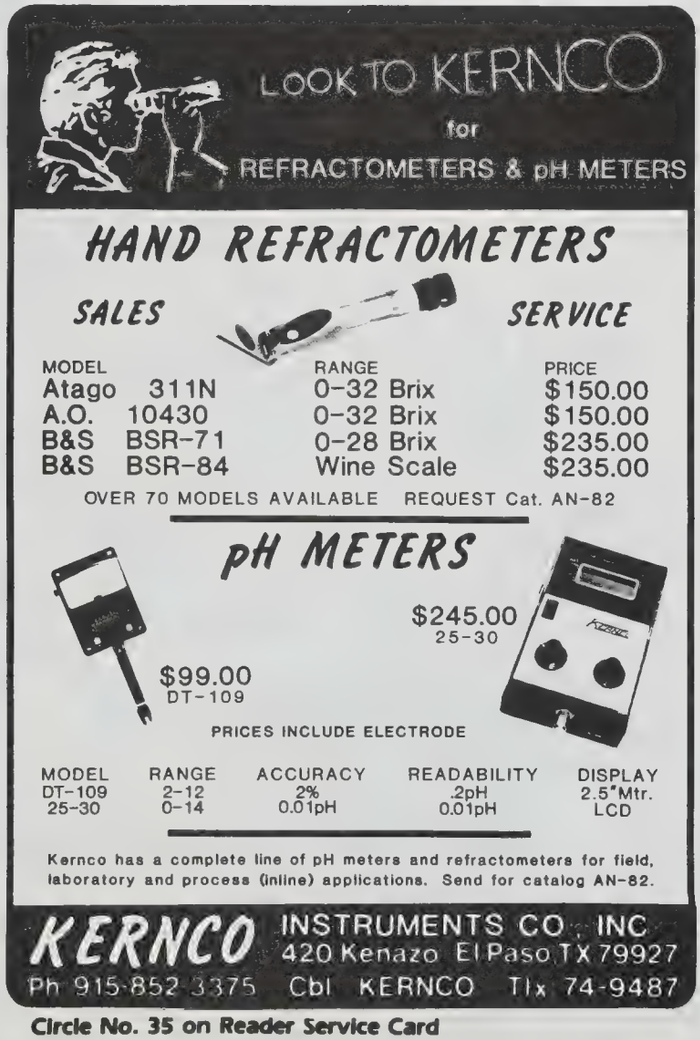
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CHRISTIAN BROTHERS

Established Winery Explores New Techniques for Varietal Bottling

By DON NEEL

Christian Brothers in Napa Valley is on the move! Winemaker, Dave Cofran, along with enologist, Derek Holstein, and technical support from Gordon Pilone, have modern equipment and grapes in Napa Valley with which they are working in many directions to make individualistic, recognized premium wines in addition to their standard bottlings.

"Christian Brothers grew to a point, now we are growing 'smaller', with new smaller tanks and smaller new wood cooperage," says Cofran. "In 1978, for the first time in 15 years, 150 barrels were purchased. Today, we have 1,200-1,300 barrels."

1974 Cabernet Sauvignon was the first vintage bottling ever released by Christian Brothers. The 1978 Chardonnay was the first wine to see new Limousin barrels and was received very well in the marketplace. Fume Blanc has been aged in oak since 1980 and a vintage bottling may be released in the near future.

Cabernet Sauvignon has seen more wood every year since the 1974 vintage which was fined with gelatin. 1975 was unfined and '77, '78, and '79 have seen more and more smaller cooperage.

Merlot (for blending) from 1981 is in American oak barrels for the first time. Comparisons between routine topping and topping and rolling the barrel for differences in oxidation, flavor, etc. are being made with two lots of 1981 Cabernet Sauvignon.

DAVE COFRAN (R) pours barrel sample for Gordon Pilone

Some of the 1979 Cabernet Sauvignon is in single 1,300 gallon casks of eastern oak, California oak, and French oak for analysis. Cofran believes the ageing process in casks is just too slow, and prefers smaller barrels.

Chardonnay from 1979 saw French and American oak for comparison, and the results have formed the procedure for barrel ageing Chardonnay in Limousin barrels. Fume Blanc is in Limousin and Nevers barrels for comparison. Cofran has observed more differences from coopers than oaks.

Cofran is excited about the 1982 Chenin Blanc due to changes in winemaking techniques. It will be the first vintage Chenin Blanc to be released for general distribution . Previously, the wine was fermented dry and sweet cuvee added back.

"In 1982, we stopped the fermentation with our centrifuge and refrigeration at about 1.2-1.6 residual sugar, and the wine is a fruity, younger, fresher wine," comments Cofran.

"We put a lot of attention on Chardonnay, Fume Blanc, and Cabernet Sauvignon," says Cofran. "In the mid-late 70's we picked our Zinfandel riper and the 1979 will be even better than the '78!" 1978 was the first vintage Zinfandel released.

"Some vineyard lots of 1980 Zinfandel got away from us, so we picked them at about 30° Brix and made our first Zinfandel Port with pot still Brandy from our Reedley facility, and I am really pleased with it! It spent 18 months in casks, and is bottled awaiting a newly designed label. I look forward to its release and the response in the marketplace! We also made Zinfandel Port in '81 and '82," adds Cofran.

Christian Brothers own vineyards will produce almost all of their '83 grape requirements. Vines in Calistoga have been t-budded from Pinot Noir to Sauvignon Blanc which they feel is the right grape for that area. Chardonnay planted in cooler areas just north of Napa will begin producing this year and be in full production by 1984.

Cofran is very happy with the Zinfandel vineyard adjacent to their South St. Helena facility, planted in gravelly, well drained soil on the Valley floor. The vineyard is picked by blocks as much as possible to optimize the ripening differences in the vineyard.

Christian Brothers built a new crushing and fermentation plant in South St. Helena in 1972. It typically handles 14,000 tons/year though one year it handled 18,000 tons. But it is

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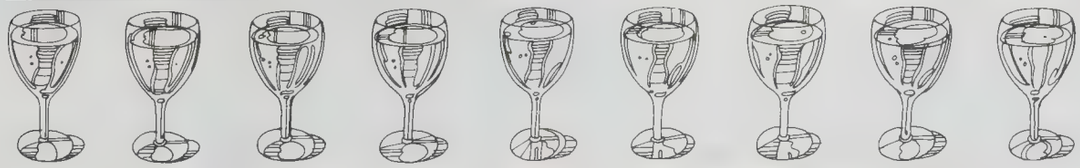

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designed for quality control of vineyard lots.

Twelve rows of five tanks each focus on a central press pad with two screw presses. Each row of tanks includes a tank in gallonage of 3,200, 4,800, 7,200, 10,000, and 15,000. There is almost no headspace to be found during crush.

Half the tanks are insulated and cooled by glycol jackets for white grape skin contact or holding for pressing and could be used as fermenters if necessary. White wine fermentation normally is done in insulated and jacketed tanks between 5,000 and 30,000 gallon capacity.

An equal number of tanks for red fermentation have jackets cooled by water from an evaporator which include built-in pumpover equipment. The white fermentation/storage tanks have a layer of fibreglass between the tank and concrete pad to minimize the energy needed for holding cold wine. The same tanks have built in mixers to keep solids in suspension prior to centrifuging.

A centrifuge which normally operates at an average capacity of 3,000-3,500 gallons/hour is used in addition to tank settling to clean up juice to less than two percent solids for fermentation.

In the last six-seven years, Christian Brothers' juice analysis at crush has included a test for Arginine content, which indicates the nitrogen level in the vineyard. With this data, a nitrogen addition can be made to a vineyard in the same fall to be leached into the soil with winter rain and be available the following growing season.

Each varietal grape has been analyzed for its proper nitrogen requirements. Nitrogen additions have been made to vineyards in preparation for the '83 crush.

With the '82 crush, a wine analysis (history) program has been added to the Christian Brothers computer to store data from the crushing reports for the use of Cofran, Holstein and staff.

A quality control tracking program was begun in '82 under Holstein's supervision. Concepts looked at by Holstein and staff include the nitrogen level in the vineyard and possible resultant H_2S. Holstein is looking at the TA/pH pre-fermentation relationship and correlating that information to SO_2 wine additions.

An analysis is in progress to evaluate pumping over by spraying or by hose to break up the cap and extract color. Holstein is studying the idea of pressing red grapes sooner to raise the anthocyanin ratio per total phenolics.

In the '82 harvest, metabisulfite was added to the gondola in the vineyard while filling, instead of adding at the crush hopper to deactivate enzymes and reduce oxidation of phenols in the juice. An SO_2 addition to the juice in the tank followed prior to inoculation.

There is a concentrated effort to determine the appropriate pH in relation to fermentation, color, balance, and ageing potential for each type of grape by vineyard; climate and soil.

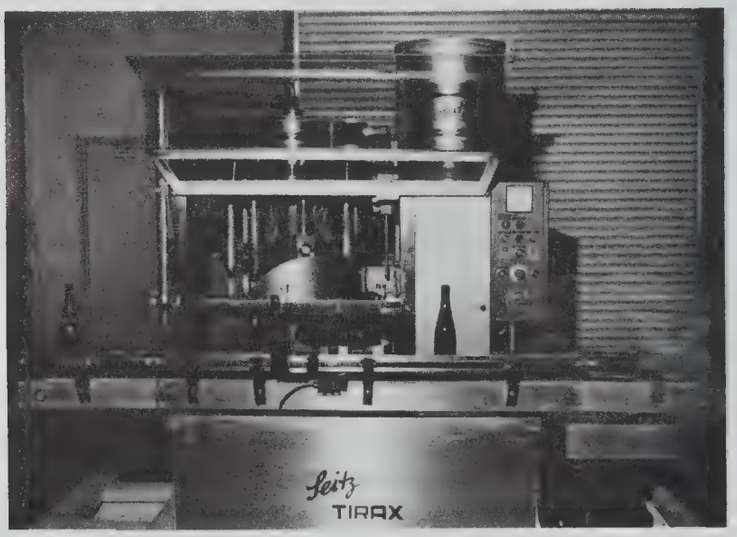
Open concrete tanks were used for crush and fermentation at the Redwood Road facility in Napa up through 1971. Some of the tanks with manholes in the top have been sealed up with only a vent on top and coated by Bishopric Products Company in the last five years giving Christian Brothers six tanks of 90,000 gallon total capacity for temporary wine storage, saving the cost of demolition of the tanks and saving greater expense of new steel tanks.

The Redwood Road facility has 200 tons of ammonia chilling capacity, for holding wine and cold stability. At South St. Helena, ammonia equipment chills glycol. "Glycol is better for fermentation, there are less headaches with low pressure jackets, but ammonia is more efficient," observes Cofran.

Cofran recalls the Christian Brothers' experience with cold stabilization. The first technique was to put wine chilled to 25-30°F by a heat exchanger in redwood tanks in an insulated stone building and hold the wine for two-three weeks. But this was a poor working situation and bad for the wood.

The next procedure in the mid '60's was to chill the wine

CHEMTRIX, INC. has introduced a series of new hand refractometers. Readings within 0.1% accuracy are taken from a single drop of liquid or semi-solid by viewing a sharp-contrast boundary through the eyepiece. Units weigh about eight ounces and include 'sure-grip' comfort grips, eye hoods to facilitate easy readings, and convenient-to-use calibration adjustments. Models are available for direct readout of low, medium, and high concentrations of sugar, or calibrated in refractive index units. For additional information, contact Chemtrix, Inc., 163 S.W. Freeman, Hillsboro, Oregon 97123 (503) 648-0762.



SWK MACHINES, INC. introduces the Tirax Mono-Bloc Filler Corker at the annual ASE meeting in Reno, Nevada. The mobile and compact unit can handle 1400 750ml bottles/hour and change parts are available for 375ml and 1.5ml bottles. The corker is available with corklock vacuum and/or heated jaws. For more information, contact SWK Machines, Inc., 47 W. Steuben Rd, Bath, NY 14810 (607) 776-6335 or 3095 Kerner Blvd. #G, San Rafael, CA 94901 (415) 457-5155, or ASE booths 181, 182, 197, 198.

by heat exchanger and hold the wine in stainless steel tanks in an insulated refrigerated room, but there were moisture problems on the outside of the room.

The third procedure was to chill the wine with the heat exchanger and hold the wine for two-three weeks in stainless steel tanks insulated with block fibreglass inside of a stone building.

Today, there are two 40,000 gallon foam insulated tanks equipped with a floating suction valve inside the tank, which is a floating racking valve which pulls wine off the top of the tank instead of the bottom. Racking off the top to a heat exchanger and pumping cold wine in the bottom is most efficient. The entire tank can be chilled to 27° F in two eight hour shifts.

After chilling, the tank is seeded with the finest grind of potassium bitartrate available at a level of 1/4 lb/1,000 gallons. After seeding, the full tank is rolled over with a mixer for 48 hours to keep the crystals in suspension before being allowed to settle. Tartrate stability depending on the wine can be achieved in as little as five-ten days. Young dry white wines achieve cold stability in one week.

A CP (concentration product) analysis of potassium bitartrate (KHT) has been conducted since the early 70's to confirm tartrate stability. The method monitors the drop in tartaric acid and potassium, working to the goal of when the CP level does not drop any more.

The technique utilizes a flame photometer to analyze the potassium level, and a spectrophotometer or HPLC to analyze the level of tartaric acid and a pH meter. Data on tartaric acid, potassium, alcohol, and pH are put into a programmable calculator to determine the CP level.

Heat stability is confirmed by a TCA test, which is simple and inexpensive.

Christian Brothers have their corks branded by cork vendors, and then they are washed at Christian Brothers with warm water and 200 ppm metabisulfite to remove the chlorine left from bleaching as well as lignin, tannin, and molds on the outside of corks.

Washing helps achieve a uniform moisture level in the corks. Corks are drip dryed, and tumbled with cold bloc paraffin to a heavier level than common, which Cofran says reduces leakers to a minimum. Six months bottle age allows the paraffin to set and the cork to be removed easily, adds Cofran.

In 1979, a Krones 60 spout filler was installed which normally runs at 180 bottles/minute. One of the few in the USA, it fills from the bottom, preventing foaming, and oxygen pickup in the bottle is kept under 1/2 ppm. The filler draws a vacuum on the bottle, followed by filling with pressurized CO_2 at 15-20 PSI, and then fills the bottle with wine.

Using a HP 97S I/O calculator connected to a scale, the fill height is monitored every ten minutes by the filling machine attendant, who takes a bottle sample to the scale and checks the weight against a predetermined weight-density determined at the beginning of each bottling day.

A staff library is maintained by the Christian Brothers which includes over 400 books and 18 journals received regularly and scanned by Cofran, Pilone, Holstein and other members of the winemaking staff.

PW is looking forward to releases of the coming vintages which will bear the fruit of the efforts of Cofran, Holstein, Pilone and staff.

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DE-Diatomite is the skeletal remains of single-celled plants called diatoms. DE is often referred to by its German name 'Kiesel Guler'. The microscopic alga have the unique capability of extracting silica from water to produce their silica structure.

When diatoms die, their skeletons settle to form a diatomite deposit. There are a number of commercial deposits located around the world, including deposits of fresh water and saltwater origin. Diatomite is a soft powdery material resembling chalk and distinguished by a variety of shapes. This raw 'earth' is processed by milling, air classification and calcining to produce the fine 'pink' grades. Soda ash is flux-calcined with the raw material to form coarser 'white' grades. The grade of DE is a function of particle size and geometry. There is no free Na^+ or $C1^-$ from the saltwater originated material but there are differences in bulk density, and therefore the permeability/retention ratio of the two different products.

DE is virtually inert in wine, it is 90% silicon dioxide plus trace elements. DE assists filtration of wine by mechanically stripping solids from the wine, not by absorption of solids.

To determine the choice of DE grade for filtration, the filtration process must be understood. The ability of DE to remove solids decreases as the particle size, and thus the flow rate increases. Conversely, as the DE particle size, and thereby the flow rate, decreases, the ability of the filter aid to remove small solids increases. The extent to which this takes place

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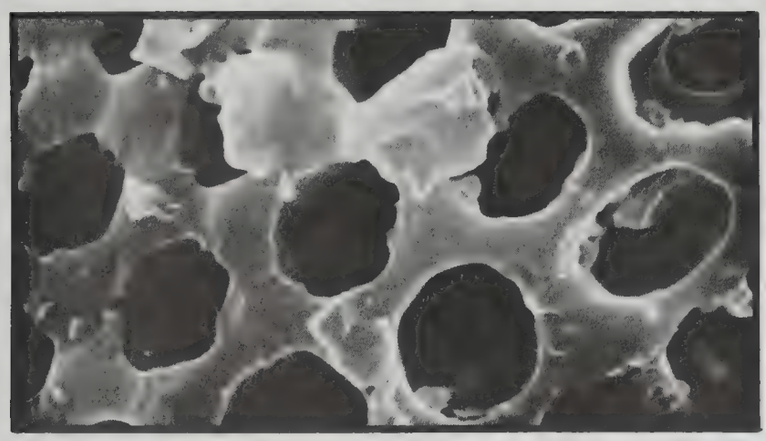

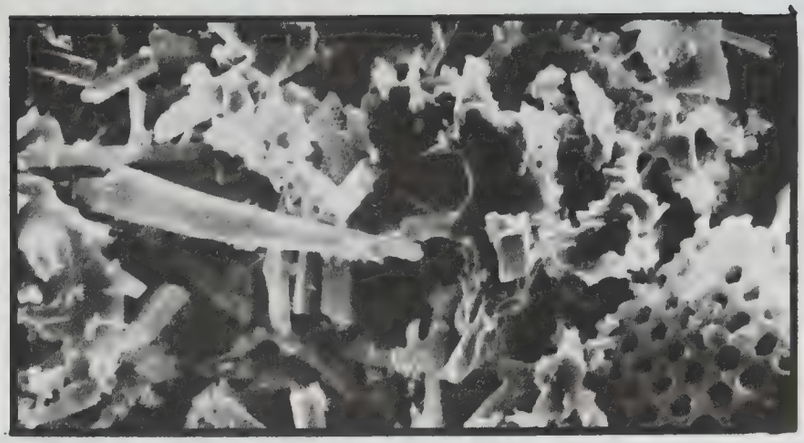

PHOTOGRAPHS provided by Manville Products Corp.

will depend very much on the type and particle size distribution of the undissolved solids being removed.

Selection of the proper DE grade is a compromise between high clarity and low flow rate, and lower clarity and higher flow rate. The best grade is that grade which provides the fastest flow rate (or greatest throughput per dollar's worth of DE) while maintaining an acceptable degree of clarity.

For a given wine, clarity of the wine is governed principally by 1) grade and amount of filter aid for precoat; 2) grade and amount of DE for body feed; 3) length of cycle; and 4) filtration rate.

It is extremely difficult to predict the particle size of the solid that will be removed by a specific DE grade. This depends upon the method used for measuring the particle size of the containment, type of wine, shape of the particle, filtration conditions and the particle characteristics.

For example, a needlelike particle might easily be removed if it approaches the filter cake sideways, while it could pass right through if it approaches on end. A mushy, soft particle might worm its way through a filter cake, whereas a rigid particle of the same size and shape would not. Variations in pressure, flow rate, vibration and air bubbles may also affect clarity.

In an actual filtration, as the cycle progresses, the filter cake tends to become partially plugged or 'tightened' by the particles of suspended solids being removed. The tightening of the filter cake produces a wine of progressively higher clarity. It may be advisable, therefore, if wine from the whole length of the cycle is blended, to consider average clarity, rather than spot clarities. This might allow use of a coarser grade of DE.

Test Equipment Available

To determine the proper grade and amount of filteraid to give maximum filter efficiency, DE manufacturers have test equipment available in their laboratories and for field use.

Dicalite uses a laboratory pressure filter. Eagle Picher can duplicate a trial in their laboratory with a customer's stable sample in a simulated pressure leaf and plate frame application. A Bomb filter and pressure filter are available from Eagle Picher for on-site testing.

Manville has a 3.1 sq. inch constant rate pressure filter with dual variable speed pumps and pressure gauges in their laboratory and available for field tests to simulate pressure filtrations and develop custom data. They also have a one square foot pressure filter field test unit with a variable speed pump, flow meter, pressure gauges, and slurry tank with agitator available.

More literature and technical service is available from the manufacturers.

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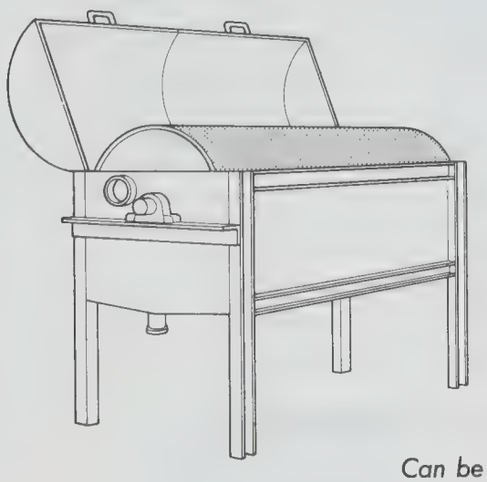

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Sterile Filter Myths and Fables

By T.N. John
Seitz Werke GmbH

(editor's note: This article was published in **The Australian Grapegrower & Winemaker**, *August, 1982 and offered to* **Practical Winery** *by SWK Machines, Inc., San Rafael, CA/Bath, NY)*

Production of biologically sound wines is of paramount importance to all winemakers. As sterile filtration is the dominant method used to achieve biologically sound wines in the modern wine industry, and as the process of sterile filtration is a simple, mechanically unsophisticated technique, it is strange to find so many myths and fables in popular use.

This paper is intended to promote a little rethinking and some controversy.

ABOUT MYTHS

Myth #1: *'I have yeast in my bottled wine, so my sterile filters are no good.'*

The Seitz Werke GmbH of West Germany operate an advisory service to the wine industry around their plant in the NAHE district of West Germany, that is to analyze and advise on winemaking problems etc.

Over many years the results of this work has been recorded and analyzed. Of all the infection problems brought to the Seitz laboratories, the sources of infection were found to be thus:

ANALYSIS OF YEAST REINFECTIONS DURING 1975-1977
40 CHECKS WITH 47 INDIVIDUAL SOURCES OF REINFECTION

Source of Reinfection	Cases No.	%	Cause
Bottle steriliser	3	6	mech. break-down, human error
Bottle mouth	1	2	inadequate flaming
Sterilising filter	8	17	damaged pressure gauge diaphragm or filter plate, unsuitable filter.
Sterilising sheets	0	0	
Filler	23	49	infected centring bells/valves, improper sterilisation/techn. modification.
Corker	12	26	infected centring bells/cork locks cork hopper not sterilised
Total	47	100	

It should be noted that the mix of winery sizes in the NAHE area is typical of most Australian wine areas, i.e. many small wineries with limited laboratory facilities and some larger, self sufficient organizations. Generally sterile filtration is performed with sheets; membranes are not in common use.

It is easy to blame the filters. It is always more difficult to trace and cure an infection source from elsewhere. This usually involves procedural changes, operator reinstruction and management control, which are less tangible and therefore harder to establish.

Before the introduction of membrane filters, the whole industry throughout the world, relied only on sterile filter sheets. In fact, the modern white table wines and sparkling wines (Perls etc.) owe their existence to the efficiency of sterile sheet filtration. Now with the general use of membranes, as final **safeguard** sterile filters, the chances of unsterility due to the filtration media are very small.

Consider the illogical set up, often seen, involving a sterile sheet filtration followed by 0.6 uM membrane followed by 0.45 uM membrane filtration and then subsequent bottling of the wine into unsterilized bottles. Even **new glass** cannot be expected to be sterile under all varieties of pallet storage and hazards.

The filter media is rarely at fault. What is a myth is the consistent sterility of **new glass** and also the infallability of the operating personnel and their adherence to laid down management procedures.

Myth #2: *'Steam sterilization of my equipment is too time consuming and difficult. I'll use a chemical sterilant which will work just as well.'*

Chemical (cold) sterilants only sterilize where they touch the equipment.

It is a physical fact that, in every piece of equipment, the designer cannot arrange that all parts of the equipment will be accessible to the sterilant. Some components will always be covered, where the sterilant cannot make contact.

Heat will pass through the body of all components. All surfaces will therefore be sterilized.

There are no short cuts to sterility. Steam or hot water sterilization of equipment has proven to be the only safe method, i.e. equipment must be held at min. 80°C for 30 minutes, alternatively max. 115°C for 20 minutes.

Myth #3: *'Membranes are more economical than sheets because of their longer service life.'*

The solids entraining capacity of classical sheets is con-

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siderably greater than membranes. Membrane life is highly dependent upon the effectiveness of the pre-filtration, i.e., if the pre-filtration is sterile then theoretically the service life of the membrane final filter will be **infinite** as there is no work for the membrane to do.

With an adequate pre-filtration there is a temptation to run membrane final filters until blocked, i.e. weeks even months.

Micro-organisms will grow and multiply on the membranes and in time will grow through and distort the membrane pore size profile. Such **grow through** can occur in three days. For this reason, membranes and filter sheets should be sterilized every day and not used for more than five days.

It is true that many users currently run membranes for much longer periods, however, their success is probably only due to the wine pre-treatment being sterile anyway. In other words, the membranes had probably broken down after a few days, but the end sterility remained intact due to the effectiveness of the pre-filters.

ABOUT FABLES

Fable #1: *'Two wrongs will make a right'—'It doesn't really matter what is the condition of the wine, sterile filters will handle the job!'*

Both filter sheets and membranes are designed to remove relatively small numbers of micro-organisms. The wine must be correctly pre-treated in order not to overload the sterile media. The wine must also be adequately pre-treated to remove colloidal and near colloidal matter, suspended proteins etc., which may prematurely clog the final filter. Not only will premature clogging result in uneconomic consumption of the sterile media, but it will also encourage operation at excessive pressure losses across the sterile media, which can result in micro-organisms being extruded through the media.

Fable #2: *'All sins can be redeemed with membranes'—'Membranes are 'absolute' filters, therefore if I use a 0.45 uM membrane, only particles smaller than 0.45 uM will pass through.'*

All membranes have a range of pore sizes. Each manufacturer analyzes the spread or incidence of the pore sizes and in stating the catalogue pore size, is merely indicating that the majority (say 99%) of the pores are less than the stated pore size. Actually, some pores will be considerably larger, albeit not many of them.

Accordingly, if the wine has been adequately pre-filtered to a low yeast count then the **chance** of a yeast finding its way to one of the few larger pores are very small. However, if the wine is heavily contaminated, then the chances of yeast finding those larger pores is obviously greater.

So even with membranes, the pre-filtration of the wine must be almost sterile. Membranes should only be expected to do a **safeguard** duty. In fact, a classical EK sterile filtration should be used prior to membranes.

CONCLUSION

Sterile filtration is rarely the cause of a sterility problem. However, it is a relatively easy thing to **pin the accusation to**. It is too often accused.

Sterility problems are usually elsewhere and can often only be cured by diligent and informed actions, often involving some **hurtful** capital expenditure and embarassing procedural changes.

For Further information contact SWK Machines, Inc. in San Rafael, CA or Bath, NY.

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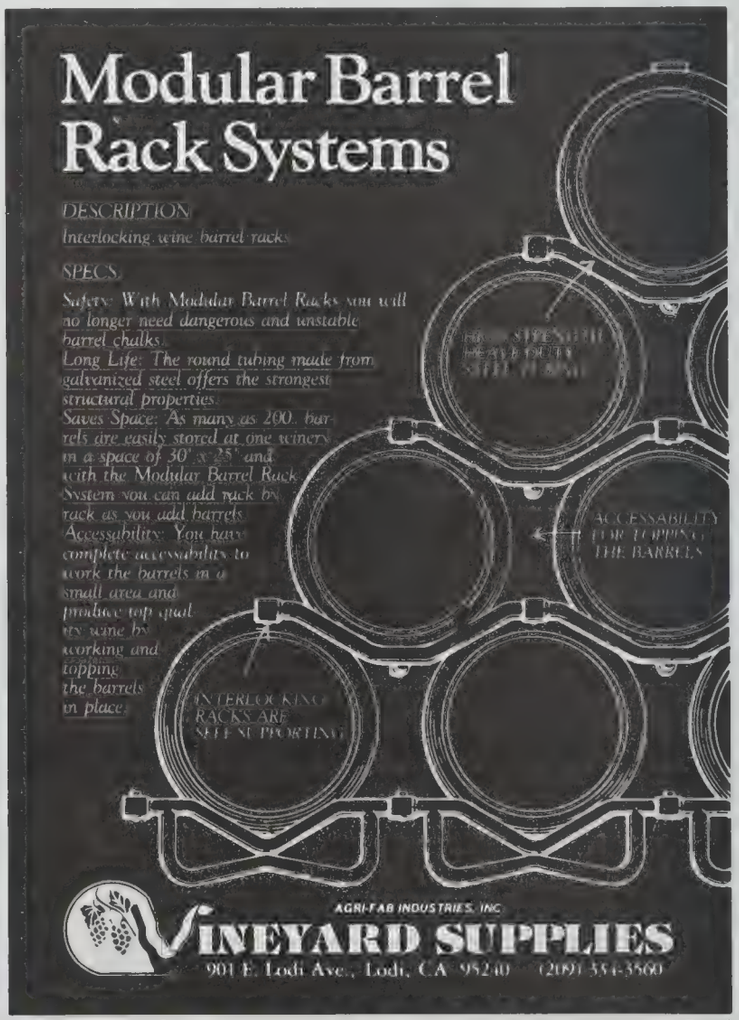
Modular Barrel Rack Systems
DESCRIPTION
Interlocking wine barrel racks
SPECS
Safety: With Modular Barrel Racks you will no longer need dangerous and unstable barrel chalks.
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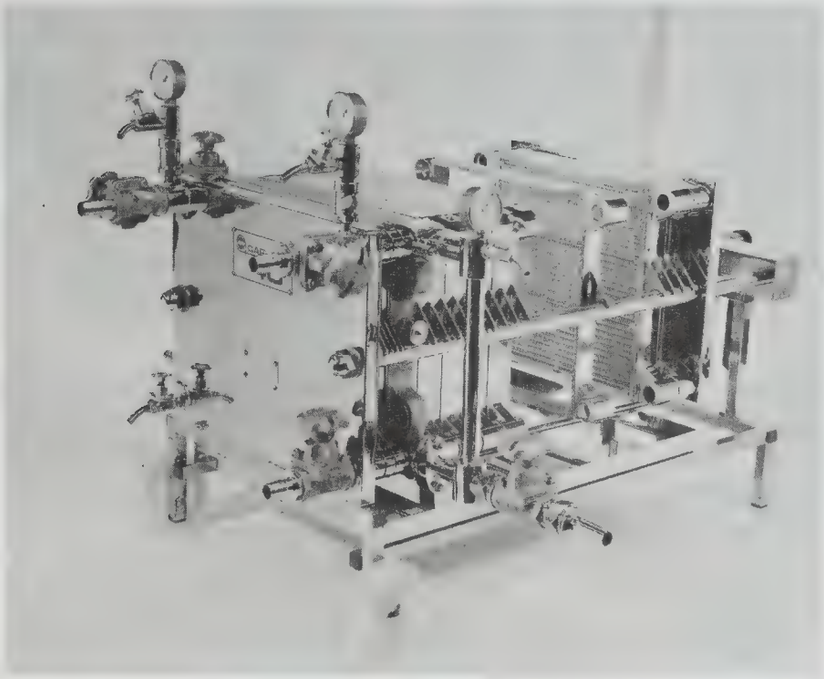
Plate and Frame Filter Purchasing Guide

Filter Equipment and Media: Part I



CARLSON Plate & Frame Filter distributed by Process Engineers, Inc.

In the May/April 1981 edition of **PRACTICAL WINERY**, a filter media cross-reference chart was published. This chart generated a great deal of interest. In the last several months, **PRACTICAL WINERY** has received numerous requests for information on the various types of filter equipment offered as well as media.

In an effort to provide this information, a purchasing guide for filter equipment and media was undertaken. Please note that this is a purchasing guide and not a cross reference chart.

Information presented here was generated with a questionnaire to manufacturers and distributors of filtration equipment and media asking for a listing of products offered to the wine industry. Information was requested on equipment including plate and frame filters, pressure leaf, and membrane filters together with the filter media appropriate to each.

Because of the quantity of information that was received, it became necessary to divide this guide into three parts, with each part devoted to one of these filter types and publication of each part in successive issues.

Part I of this guide follows with purchasing information on plate and frame filters and media. Information on specific products is included **only** if the manufacturer and/or distributor responded to the questionnaire. Manufacturers and/or distributors were each contacted to be sure they had received the questionnaire and were aware of the publication deadline.

A note on the plate and frame filter media guide: Information on media was requested, asking for a listing of products offered by gradation from 'coarse to tight'. Products include filter cloth, sheet/pad stock, paper and pulp.

This very general indication of grade was done only as a reference for ordering products with no attempt to cross-reference or compare all of the different products offered. It was also done with the understanding that the appropriateness of any specific media product would depend on so many variables that the manufacturer/distributor should be contacted directly.

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Manufacturer/Distributor	Filter Model(s)	Chasis, Material of Construction	Plates, Design & Material of Construction*	Filter Size(s)/Plate Size(s)
Budde & Westermann (DTR) 151 Forest St. Montclair, NJ 07042 (201) 744-5363	FILTROX	304 or 316 ss or steel	ss, polypropylene or combinex (ss frame w/polypropylene core)	40 cm. sq. 60 cm. sq. 80 cm. sq. 120 cm. sq.
The Compleat Winemaker (DTR) 1219 Main Street St. Helena, CA 94574 (707) 963-9681	COMES MICROPRESS	304 ss	Duran (plastic) good up to 120°C	40 cm. sq.
Enotech Corporation (DTR) P.O. Box 576 Palo Alto, CA 94302 (415) 858-1090	CRISTALINOX	ss	ss or plastic	40 cm. sq.
fp Packaging, Inc. (DTR) P.O. Box 881 S. San Francisco, CA 94080 (415) 871-5497	FILTROX ECONOM	Mild steel, ss or request "	Sheet filter frames; ss or polypropylene "	40 cm. sq. 60 cm. sq. 80 cm. sq. 80cm. x 120cm.
Fleming-Potter Co., Inc. 1028 SW Adams St. Peoria, IL 61602 (309) 676-2121	NOVOX	"	Sheet filter frames or lees filter frames; ss or polypropylene	100 cm. sq. 120 cm. sq.
Filter Products, Inc. (DTR) 892 S. 19th St. Richmond, CA 94804 (415) 232-2328	GERTA	304 or 316 ss	304 or 316 ss	40 cm. sq. 60 cm. sq. 80 cm. sq. 100 cm. sq.
Industrial Filter & Pump Mfg. Co. (MFR) 5900 Ogden Ave. Cicero, IL 60650 (312) 656-7800	I.F.P. Type 199	Cast iron	Plate & frame; recessed plate. Polypropylene, ss, coated coated cast iron	10 cm. sq., & 12, 18, 24, 30, 32, 36, 42, 48, and 60 cm. sq.
The Moffett Co., Inc. (DTR) 6985 Via Del Oro, A-5 San Jose, CA 95119 (408) 578-4910	STRASS-BURGER	304 or 316 ss	304 or 316 ss or Noryl (plastic)	40 cm. sq. 60 cm. sq.
Process Engineers, Inc. (DTR) 3329 Baumberg Ave. Hayward, CA 94545 (415) 782-5122	A.P.V. CARLSON Model 24 Model 40 60 cm. sq. & 100 cm. sq.	316 ss or painted steel with ss at all contact points " 316 ss	Expanded ss, polypropylene, or Noryl " 316 ss	40 cm. sq. 40 cm. sq. 60 cm. sq. & 100 cm. sq.

***FOOTNOTES:**

Plate Design—Most of the manufacturers/distributors offer:

1. frames for DE (diatomaceous earth) filtration;
2. cross-over or change-over plates/chambers making it possible to combine two different types of filtration (i.e., clarification and sterilization) in one unit and in series.

Porting:

fp Packaging, Inc.—external or internal porting offered as option.
Industrial Filter and Pump Mfg. Co.—porting is internal with external as option.
Valley Foundry and Machine Works—external or internal porting offered as option.

Chasis Capacity, Number of plates	Ported Externally	Valves, Design & Material of Construction	Sight Glasses Included	Pressure Gauges Included	Drip Pan Included	Drip Pan Material of Construction	Maximum Operating Pressure	Unit is Stationary	Unit is Portable	Method of Closing* Manual	Method of Closing* Hydraulic
2 to 3 to over 100	X	ss	2	2	X	ss	60 PSI to 100 PSI	X			X
10 to 60	X	diaphragm or butterfly	1	1	X	ss	60 PSI		X	X	Option
5 to 81	X	ss	2	1	X	ss	– – –		X	X	
20 to 300	*	Brass or ss	2	2	X	ss	8 ATM	all others	40 cm. sq. 60 cm. sq.	X	option all others
1-99 1-219 1-219 1-349	X	butterfly, ball or triple-seat in ss, 1" to 6" sizes	2	2	X	ss	120 PSI	option	option	option	option
contact mfr.	*	as specified	*	1	*	*	150 PSI standard; 250 PSI option	X (units 24 up to 60 cm. sq.)	X (units up to 18 cm. sq.)	option	option
11, 21, 31, or 51 30, 60, 100, 200, 250, or 300	X	ss, chrome plate, bronze, hard PVC	2	2	X	ss	4.5 ATM		X		option
max. 36 ss or 28 plastic	X	ss butterfly or diaphragm	2	1 or 2	X	ss	50 PSI		X	X	
max. 60 ss or 50 plastic	X	"	2	1 or 2	X	ss	50 PSI		X	X	
80 is max. more available	X	"	2	2	X	ss	50 PSI	X			X

Manufacturer/Distributor	Filter Model(s)	Chasis, Material of Construction	Plates, Design & Material of Construction*	Filter Size(s)/Plate Size(s)
Scott Laboratories, Inc. (DTR) P.O. Box 9167 San Rafael, CA 94912 (415) 457-8460; **Scott Laboratories, Inc.** NE, USA P.O. Box 237 Elmira, NY 14902 (607) 739-8818 **Scott Laboratories, Ltd.** 950 Brock Road South Pickering, Ontario L1W 2A1 (416) 839-9463; **Scott Laboratories, Ltd.** Western Canada 1824 Highway 97 South Kelowna, British Columbia (604)769-5392	SCHENK	316 ss	Externally ported, 316 ss or Noryl	Gnome: 20 cm. sq. Kapitan: 40 cm. sq. Regent: 40 cm. sq. Admiral: 60 cm. sq. Niro 1000: 100 cm. sq.
Robert L. Stollenwerk Co. (DTR) P.O. Box 282 Egg Harbor, NJ 08215 (609) 965-0074	STRASS-BURGER	316 ss	316 ss or Noryl (plastic)	40 cm. sq. & 60 cm. sq.
SWK Machines, Inc. (MFR/DTR) 3095 Kerner Blvd., Suite G San Rafael, CA 94901 (415) 457-5155; **SWK Machines, Inc.** 47 W. Steuben St. Bath, NY 14810 (607) 776-6335	SWK Orion Zenit	304 ss standard; 316 option. "	304 ss or Noval® (plastic) "	40 cm. sq. 60 cm. sq.* 40 cm. sq. 60 cm. sq.*
Valley Foundry & Machine Works (MFR/DTR) 2510 So. East Ave. Fresno, CA 93717 (209) 233-6135	VALLEY Models: S24E, S500, 300, 200, VSP-200, 330, 400, 442	304 ss or steel	Aluminum Pyramid Surface; 304 or 316 ss screened; 304 or 316 ss machined grooves & channels	6 inch, & 12, 18, 24, 30, 36, and 42 inch
A.O. Wilson Process Equipment, Ltd. (DTR) P.O. Box 820 Bolton, Ontario L0P 1A0 (416) 857-1511	COLUMBIT	ss	ss or plastic	40 cm. sq. 60 cm. sq.

Sight Glasses:
Industrial Filter and Pump Mfg. Co. – sight glasses not included but available.

Drip Pan:
Industrial Filter and Pump Mfg. Co. – drip pan not included, but available with option on material of construction (i.e., coated steel, plastic, etc.)

Portable vs. Stationary Mountings:
SWK Machines, Inc. – both the Orion and the Zenit filters have as an option a shortened chassis for the 60 cm. sq. filter that can be portable.
Scott Laboratories, Inc. – the largest Admiral models are stationary; stationary option for all other models.

Method of Closing: Many filters are offered with either the hydraulic or manual methods of closing as options, and then there are different options offered as to the type of hydraulic or manual method preferred.

Used plate and frame filters are available from Jaco Equipment Corp., 3080 Main Street, NY, NY 14214 (716) 836-3755.

Chasis Capacity, Number of plates	Ported Externally	Valves, Design & Material of Construction	Sight Glasses Included	Pressure Gauges Included	Drip Pan Included	Drip Pan Material of Construction	Maximum Operating Pressure	Unit is Stationary	Unit is Portable	Method of Closing* Manual	Method of Closing* Hydraulic
23 plates	X	butterfly (standard on	2	2	X	ss	5 to 8 Bars depending		X	X	option
15 to 119	X	Kapitan); slant; &	2	2	X	ss	on model		X	X	"
15 to 119	X	diaphragm (standard	2	2	X	ss			X	X	"
299	X	on Gnome, Regent, &	2	2	X	ss			*	X	"
349	X	Admiral)	2	2	X	ss			X	X	"
60 max.	X	ss or hard PVC	2	2	X	ss	60 PSI	option	option	X	
13 to 100	X	ss only,	2	2	X	ss	6 Bars		X	X	
60 to 250	X	sanitary design, butterfly	2	2	X	ss	6 Bars	X*		option	option
13 to 100	X	or ball	2	2	X	ss	3 Bars		X	X	
60 to 180	X		2	2	X	ss	3 Bars	X*		option	option
8 to 60	*	ball, butterfly, gate & diaphragm in ss or bronze	2	1	X	ss	100 PSI	option	option	option	option
20 to 60	X	butterfly	2	2	X	ss	— — —	option	X	option	option
up to 150	X	standard, others available at extra cost	2	2	X	ss	— — —	option	X	option	option

Plate and Frame Filter Media

AMF Cuno (MFR/DTR)
Microfiltration
Products Division
400 Research Parkway
Meriden, CN 06450
(203) 237-5541

ZETA PLUS Non-Asbestos Filter Sheet/Pad and Disc Stock with grades from coarse to sterile in sizes and shapes to fit most filter presses in use—custom sizes available upon request.

Fluid Technology, Inc. (DTR)
4237 Detroit Ave.
Oakland, CA 94619
(415) 881-5399

George Yardley Co. (DTR)
18401 Mt. Langley St.
Fountain Valley, CA 92708
(213) 592-4555 - (714) 653-5920

Marvil Co. (DTR)
5691 S.E. International Way
Portland, OR
(503) 653-5920

Budde & Westermann (DTR)
151 Forest St.
Montclair, NJ 07042
(201) 744-5363

FILTROX FIBRA-FIX Clarifying Sheets/Pads:

Asbestos Type	K4	K5	K7	K10	W-Sterile
Asbestos-Free (AF)	AF4	AF5	AF7	AF10	AFW Sterile

Sizes for most plate and frame filters stocked.

Cambridge Wire Cloth Company (MFR)
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Cambridge, MD 21613
(800) 638-9560

Metallic Filter Cloth/Sheet Stock and Filter Leaves available from stock in 304 or 316 ss (other alloys available: Monel, Hastelloy, Carpenter 20, Inconel) with a complete line of woven wire ultrafine meshes available in the following weave types: plain, twilled, plain Dutch, and stranded.

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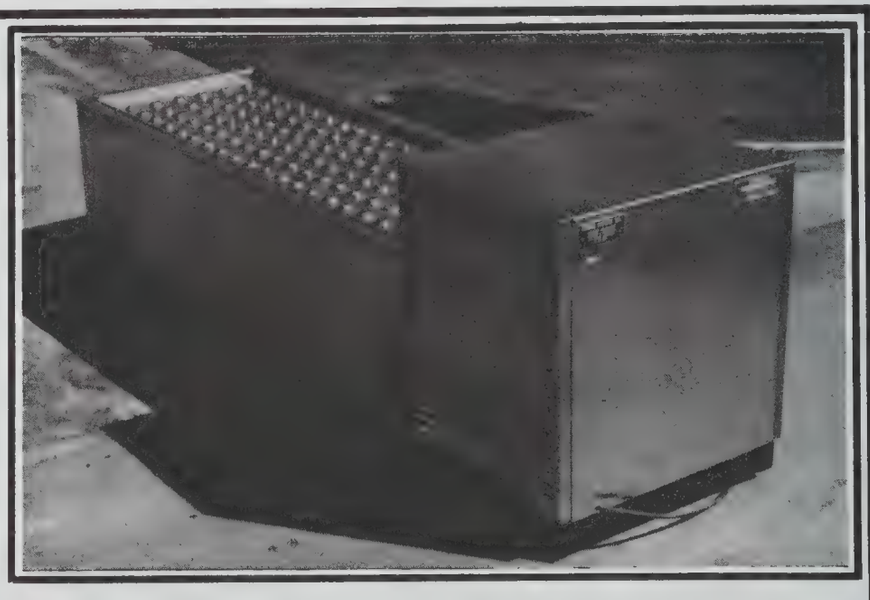

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Fresno, CA 93721
(209) 485-2692;
Finer Filter Products Div. (MFR/DTR)
27-W North Ave. East
Cranford, NJ 07016
(201) 272-9400

Acid Washed Asbestos Filter Sheets/Pads:

Grades	CLARIFYING	POLISHING	STERILIZING
	530, 535, 540, 545	550, 555, 560, 565, 570	575, 580, 585, 590, 595

Non-asbestos "Cellupore" Filter Sheets/Pads:

Grades	CLARIFYING	POLISHING	STERILIZING
	315, 320, 325, 330, 335, 340	735, 740, 745, 750, 755	760, 765, 770
	ALL CELLULOSE	DE/CELLULOSE	

FFP KF Series Filter Sheets/Pads:

KF-4 (Clarifying)	KF-3 (Polishing)	KF-1 (Sterilizing)
DE/CELLULOSE		

All the above available in all sizes, custom sizes by request.

Eaton-Dikeman (MFR/DTR)
P.O. Box A
Mount Holly Springs, PA 17065
(717) 486-3438

EATON-DIKEMAN Non-asbestos Filter Papers:

E-D Grade:	988-18	627-85	901-85	901-140	909-20
Permeability:	Fast	Slow	Slow	Slow	Slow

Sizes for all plate and frame filters in use; custom sizes by request.

Filter Products, Inc. (MFR/DTR)
860 S. 19th St.
Richmond, CA 94804
(415) 232-2328

Non-asbestos Filter Sheets/Pads in a full range of grades from coarse to sterile in sizes for all plate and frame filters in use.

Great Western Chemical Co.
A.R. Zacher Co.- Div. of G.W.C.
Great Western Chemical Co. (DTR)
107 W. Barham
Santa Rosa, CA 95401
(707) 526-2324;
A.R. Zacher Co. (DTR)
200 Santa Fe Ave.
Fresno, CA 93714
(209) 485-4150

EATON-DIKEMAN
Full line, all sizes and grades, coarse to sterile including filter cloth, paper, sheets/pads, and polypropylene sheets with latex (custom made).

Industrial Filter & Pump Mfg. Co. (MFR/DTR)
5900 Ogden Ave.
Cicero, IL 60650
(312) 656-7800

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Non-asbestos Filter Sheets/Pads to fit their Type 199 plate and frame filters in the following sizes: 10, 12, 18, 24, 30, 32, 36, 42, 48, and 60 cm. sq., grades available for 15 to 30 micron filtration, 20 to 40 micron filtration, and 30 to 60 micron filtration.

Sheet/Pad Stock for use with DE: polypropylene, dacron, nylon, and twilled cotton.

Metallic Filter Cloth (Sheet Stock) available in 24 x 110 Dutch weave, cut to size.

The Moffett Co., Inc. (DTR)
6985 Via Del Oro, A-5
San Jose, CA 95119
(408) 578-4910

STRASSBURGER Non-asbestos Filter Sheets/Pads - 3 types:

CLARIFYING	SPECIAL	STERILIZING	HEAVY-DUTY
K0, K1, K2, K3, K5, K7, K10;	Enorm S, Enorm, Univers., FF	Steril-B, Steril, Steril-S	Record, Super

Available in the 40 cm. sq. size, with other sizes upon request.

Process Engineers, Inc. (DTR)
3329 Baumberg Ave.
Hayward, CA 94545
(415) 782-5122

A.P.V. CARLSON Non-asbestos Sheets/Pads:

Grade:	0	NA 30	NA 50	NA 70	NA 130
Use:	Very coarse clarifying	Coarse	Polish	Fine Polish	Sub-Micronic

---

Scott Laboratories, Inc. (MFR/DTR)
P.O. Box 9167
San Rafael, CA 94912
(415) 457-8460;
Scott Laboratories, Inc.
NE, USA
P.O. Box 237
Elmira, NY 14902
(607) 739-8818;
Scott Laboratories, Ltd.
950 Brock Road South
Pickering, Ontario L1W 2A1
(416) 839-9463;

Scott Laboratories, Ltd.
Western Canada
1824 Highway 97 South
Kelwona, British Columbia
(604) 769-5392.

SCOTT Non-asbestos Acid-washed Filter Sheets/Pads:
Grade: (COARSE) DB SG SM SR SX SY SZ (STERILE)
Available in all sizes and all grades, with custom sizes by request.

Robert L. Stollenwerk Co. (DTR)
P.O. Box 282
Egg Harbor, NJ 08215
(609) 965-0074

STRASSBURGER Non-asbestos Filter Sheets/Pads:
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SWK Machines, Inc. (MFG/DTR)
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San Rafael, CA 94901
(415) 457-5155;
SWK Machines, Inc.
47 W. Steuben St.
Bath, NY 14810
(607) 776-6335

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K 500

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Whatman Laboratory Products, Inc. (MFR/DTR)
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Clifton, NJ 07014
(800) 631-7290
(201) 773-5800;
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(800) 543-3000 ext. 4055

WHATMAN LABORATORY PRODUCTS, INC. **Non-asbestos Filter Sheets/Pads** available in various grades for filtration from 2.5 microns to 40 microns and made to size specification.

A.O. Wilson Process Equipment Ltd. (DTR)
P.O. Box 820
Bolton, Ontario L0P 1AO
(416) 857-1511

COLUMBIT Filter Sheets/Pads:
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Grade 00 1 2 3 5 7 10 — CLARIFYING; ST — STERILE; SINGLE — WASHABLE SHEETS

Asbestos Sheets/Pads:
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ENO-QUIPS by gerald weisl

You're Right! We shouldn't have told him the New York State wine beat out the California bottlings in the Chardonnay Tasting.

PRACTICAL WINERY'S

FILTER EQUIPMENT AND MEDIA PURCHASING GUIDE

will continue with

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Pressure Leaf Filters

July - August 1983

and

PART III

Membrane/Cartridge Filters

September - October 1983

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CUVAISON:
Advent of Red Winemaking in France

By DON BLACKBURN

'The sojourn of wine in the vat was invented for color, being all the more successful the longer the juice is left the leisure to 'boil' on the skins, and the more substance the skins have to give. This science came about by accident, when a winemaker noticed the unusual color of a must left a particularly long time in the bottom of a vat. Thus, laziness was transformed into art.'

With these words, Olivier de Serres, Secretary of State under Henry IV, described a new and far-reaching development which had begun to revolutionize winemaking just before he published **Le Theatre de l'Agriculture et la Nouvelle Maison Rustique** in 1615.

Up until then, wine had been made by treading grapes in troughs to extract most of the juice, which ran through a drain hole, and into the barrels where it would ferment. Pressing was sometimes carried out on whole grapes, and sometimes on treaded grapes.

In 15th-century tapestries of harvest scenes, the significant missing element is the large fermenting vat. After 1600, winemakers in Burgundy and Bordeaux began to adopt their use, but the wine they sought to make was still quite different from the 'grand vin' which we know today. Another passage from the writing of Olivier de Serres describes for us the cuvaison method of the 17th century:

'As soon as the vat was filled with crushed grapes, a man stood guard with his ear against the outside until he heard it start to 'boil'. This took anywhere from two to three hours, after which an excellent 'clairet' wine could be taken out, the most delicate and flavorful coming first.'

A 'clairet' wine has a color between red and rose. The word 'clairet' was deformed in Bordeaux to become famous as 'claret', synonymous with red Bordeaux to generations of Englishmen.

Preference for the lightness of the wines of Bordeaux was to continue in England until the advent of an economic blockade of the continent in 1679-85, 1688-92, and 1703-10. During these years of strife, the English imported Ports and Sherries and lost their taste for clarets.

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Between 1710 and 1750, winemakers of Bordeaux regained a large share of the British market by developing the 'grand vin', a true, red wine capable of improving with age. This subject deserves to be treated in depth, but I shall simply note here that the 'New French Clarets' had a production method including: cuvaison, pressing, barrel ageing, racking, fining, and retail sales in carafes served directly from the barrel in English pubs. Bottle ageing was possible, but the expense of the glass made it occasional.

In Burgundy, production of light wines lingered into the last quarter of the 18th century. In 1807, Napoleon's finance minister, Chaptal, made the following description of the 'older' method used in Burgundy.

'The sweeter the must, the longer it should be left in the vat. Lighter wines of Burgundy can't take more than six to twelve hours of cuvaison. The most famous of these is that of Volnay. This wine, so fine, so delicate, so agreeable, can't stand a cuvaison of more than 18 hours, and doesn't last from one harvest to the next. Pommard is the second quality of light wine of Burgundy. It lasts longer than that of Volnay, but if kept for more than a year, it gets oily, goes stale, and takes on an onion skin color.'

By 1780, winemakers in the Cote de Nuits had begun prolonging the cuvaison to the point where the mass had time to heat up and take on a red wine color and astringency. After 1800, the Cote de Beaune was following suit, and wines of Burgundy caught up with the 'grand vin' status which had brought to the wines of Bordeaux, a 'Golden Age' of prosperity.

A series of animal and fungal diseases, known collectively as the Phylloxera Crisis caused many low maturity harvests between 1850 and 1900. Wars killed off the conscripted vignerons in 1870, 1914, and 1940. Since World War II, economic pressures have been pushing winegrowers to modernize their operations.

A major watershed development in French vitiviniculture was the great freeze of February, 1956. Many vineyards were destroyed, and the ensuing small crops led to wine scarcity and market instability. By the early 1960's, extensive replantings all over France were in production. Winegrowers found themselves with a sudden, unprecedented rejuvenation of the vineyards. They soon learned the benefits of young vines and many vignerons have since set aside the old tradition of 'poor soil, old vines, low yields'.

These viticultural changes have made rich, astringent, long-lived wines of yore seem like vague memories. Yet red winemaking methods, while adapting to the nature of today's grapes, have retained most of the basics established before 1850.

Don Blackburn has a degree in viticulture and enology from the School of Viticulture in Beaune, France. He spent four years working in various French wineries; Chateau Cheval Blanc in St. Emilion, Chateau Giscours in Margaux, F.E. Trimbach in Alsace, G.M. Babe in Champagne, and numerous growers and shippers in Cote d'Or.

Stateside, he has worked as assistant winemaker at Spring Mountain Vineyard, St. Helena, CA and Wollersheim Winery in Prairie du Sac, WI.

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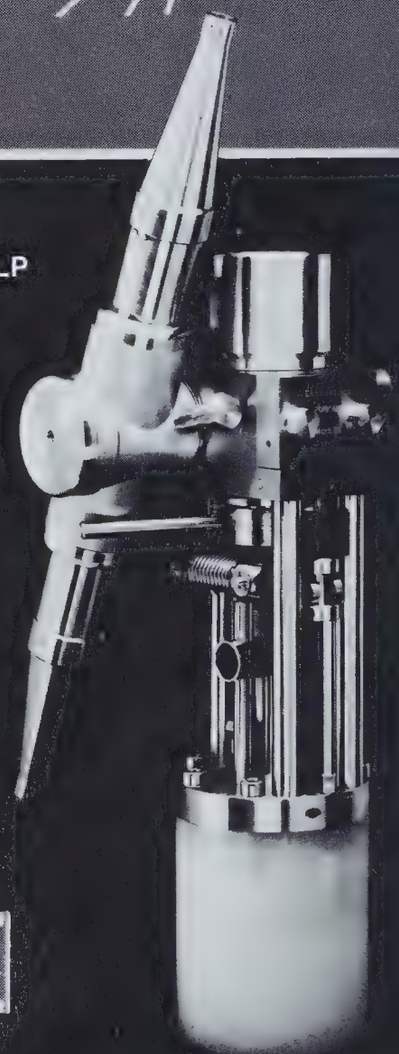

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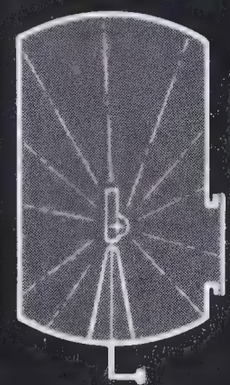

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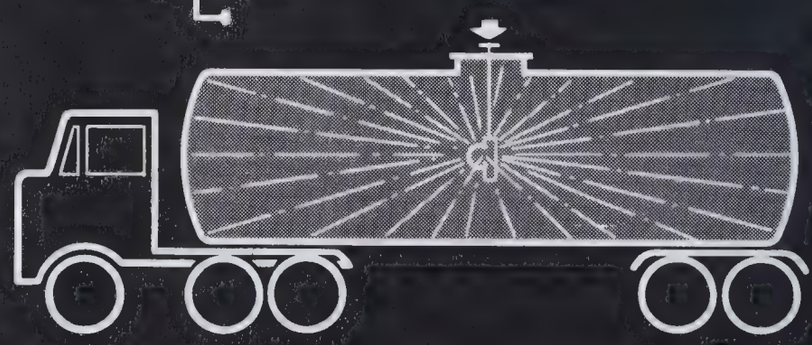

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Turner Improves Bag-in-Box Shelf Life with New Packaging and Equipment

Turner Winery in Woodbridge, CA has installed new bag-in-box filling equipment to fill the patented 'Wrightseal' bags which should increase shelf life to six-twelve months or longer over his previous bag-in-box packaging according to John Turner, winemaker.

Turner began using bag-in-box packaging in March of 1982 and noticed a rapid dissipation of SO2 in the filled container. "We filled the bag with wine having 50-55 ppm free SO2 and in one week, a great percentage was gone," says Turner.

To combat that loss, Turner filled a certain quantity of bag-in-boxes with each of his four wines one day every week to maintain a fresh product flowing into distribution channels. But wine was being returned from states such as Texas or farther east that had gone flat.

Turner searched for a new bag-in-box supplier that would reduce the oxidation and breakdown problem. Peter Thomsen of Wrightcel, Limited of Australia offered his patented filler and bags for a bench test. Turner conducted a six month bench test and found no oxidation or breakdown in that time period and ordered Wrightcel's equipment and packaging.

Wrightcel equipment arrived in February and Turner put it into service for his four wines; Burgundy, Rose, Rhine, and Chablis. Turner is now bottling Chablis in two 12 hour shifts, once every two weeks with only 30-35 ppm free SO2. The single spout filler handles 5,000-6,000 gallons per day.

Turner has observed an increase in bag-in-box competition in the marketplace since 1981 when there were only about four wineries offering the bag-in-box product. "Today, many more wineries are looking at the bag-in-box product," says Turner, "so you must guarantee shelf life due to a slower turnover of inventory."

Turner finds it very competitive where retail outlets typically carry three or four generics in bag-in-box from at least three wineries and the Wrightseal package is assuring Turner of the essential shelf life quality. Bag-in-box products represent about half of Turner's production and are made up of 50% white, 25% Rose, 25% Burgundy.

Wrightcel's patented packaging includes a patented gland and spout with a tap that will puncture a special membrane upon first use by the consumer. The special membrane is attached to the gland by heat sealing at the filling machine upon completion of filling, to ensure a leak-free pack and maximum oxygen barrier.

The patented Wrightseal high barrier bag is constructed of two layers to provide high pinhole and flexcrack resistance. The inner layer is a modified low density polyethylene and the outer layer is available either as a laminate polyester metalized and coated with polyvinyldichloride (PVDC) or a transparent polyester coated with PVDC.

Wrightcel supplies a box pattern for the winery to use in ordering boxes that will accommodate the Wrightseal tap, patented in 1979. Filling machines are available with one or more filling heads.

Wrightcel has supplied bag-in-box equipment to one other California winery in addition to two wineries in British Columbia. Thomsen reports that over half of the wine production in Australia and New Zealand goes into bag-in-box packaging today.

Thomsen notes bag-in-box packaging may cost as much as 10% more than bottles, but that cost is compensated by the reduced warehouse space necessary for the flattened empty containers and improved utilization of storing and shipping the square containers.

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VINEYARD APELLATION COMPARISON

As the price for Napa Valley Cabernet Sauvignon grapes has escalated, Louis M. Martini Winery began to experiment with Cabernet Sauvignon grapes from other regions, evaluating their characteristics by making separate, vineyard designated wines. The five regions/vineyards selected for this experiment were:

Napa Valley-Carneros region; 'La Loma' vineyard
Santa Maria in Santa Barbara County; 'Tepusquet'
Santa Ynez Valley in Santa Barbara County; 'Foxen Canyon'
Paso Robles in San Luis Obispo County; 'Rancho Tierra Rejada'
Greenfield in Monterey County; 'International' vineyard

In order to account for variations in vintages, these same vineyards were used during the three year period, 1977-1979.

Taking only degrees Brix and total acidity into consideration, grapes were picked at optimum maturity for each area. Wines underwent identical cellar practices, with no oak barrel ageing. Only 1,300 and 5,000 gallon redwood and 100-year-old American oak casks were used. No acid additions, fining or filtration were done.

While Martini conducted these experiments for their own education, the winery is now offering, on a limited basis, the 1978 series of these Cabernets at their tasting room. Included in the series is a blend of the five different wines.

Taking advantage of the opportunity, **Practical Winery** held a blind tasting of these six 1978 Cabernet Sauvignons in hopes of gaining greater insight to the particular characteristics of these five areas and to see if such characteristics could be in fact identified when tasted blind.

The tasting was held at Simi Winery in Healdsburg, CA. Participating were Zelma Long, winemaker at Simi; John Jaffrey, winemaker at Stephen Zellerbach Winery; Dave Ramey, assistant winemaker at Simi; Hank Wetzel, winemaker at Alexander Valley Vineyards; three members of the **Practical Winery** staff, and Michael Martini, winemaker at Louis M. Martini Winery. Martini, having been the instigator of these vineyard experiments, offered a good deal of information on the wines during the discussions which followed the tasting.

After the tasting panel silently tasted the wines, writing their own descriptor notes, each wine was discussed and guesses made as to the regional origin.

Cabernet A was guessed as being from Tepusquet because of its herbal, slightly vegetal qualities. Other tasters found no vegetal qualities, describing the wine as light and delicate.

Of all the wines, A seemed to change the most with airing, gaining more regional character. Martini felt this was due to a particular oxidative reduction point which he has found characteristic of many wines from the Tepusquet area.

Little to no regional character was noted in the second wine. 'It started light and tapered off,' said Martini. One taster guessed it was from a warm coastal climate are. It was the Paso Robles/San Luis Obispo 'Rancho Tierra Rejada'.

Guessed as the Monterey Cabernet due to its strong Pinot Noir like qualities and flowery perfume, the third wine was in fact the Santa Ynez Valley/Santa Barbara County vineyard. 'Most people at our winery feel this Cabernet is the closest to the Napa Valley,' Martini commented.

The fourth wine, described as minty, lightly menthol with a eucalyptus nose, convinced most of the tasters that it was from Napa Valley-Carneros region. In fact it was the favorite of many, noted especially for its complexity.

Discussion continued on that presumption as Martini described the characteristics of the Carneros vineyard, only to find out the wine was actually the blend of the five vineyards: 24.4% Santa Ynez, 21.3% Napa Valley-Carneros, 18.8% Santa Maria, 18% Monterey and 17.5% Paso Robles. Even with the choices narrowed down 50-50, there was still debate as to whether the fifth wine was the Napa Valley or the Monterey. The slight herbal, vegetal quality led some to believe it was the Monterey yet this same herbal-fruit character has been present in Carneros Cabernets as well.

Once revealed to be the Monterey, Martini stated that they have never gotten any powerful or stinky vegetative qualities from this vineyard. He believes this is due to the fact the grapes are picked quite ripe, usually around 24° Brix in later October or early November.

With an earthy, dusty, cigar-box nose, the Napa Valley Carneros 'La Loma' was thought to be from a cool growing area, either Monterey or Carneros. Martini had outlined the peculiarities of this vineyard earlier when everyone mistakenly guessed the blend to be the Carneros Cabernet.

Total acidity at picking may be 0.55, 0.6, and the pH will still be 3.1,' explained Martini, 'yet the grapes rarely sugar above 19-20° Brix. Grapes are perfectly ripe, they just don't show it in sugar.'

From 40-year-old vines planted on hillsides, these grapes make wines of intense color and flavor, what Martini describes as 'hard and thin in the mouth'. 50% of the blend for Louis Martini's Special Selection Cabernet Sauvignon comes from this vineyard, included to assure longevity.

In the past year, this same group of 1978 Cabernets have been tasted by over 2,000 people and only one person has guessed all six viticultural areas correctly.

'People often mistake the Santa Maria for Monterey. If you tell people which wine is which before they taste, the Napa Valley becomes the favorite. If tasted blind, Santa Ynez Valley or Monterey come out on top and Napa Valley rarely does as well,' said Martini.

Bottled one and one-half years ago, the wines have changed dramatically. 'Santa Maria, especially, after four to five years in the bottle, looses its overt regional characteristics with bottle age. Other winemakers who have dealt with this vineyard have noticed the same thing. When this wine was first bottled, it had an intense bell pepper quality which has since disappeared,' added Martini.

How the pH of the wine will effect its potential for age was another area of question, the general opinion being that a wine with a high pH will tend to 'break down' earlier. For this reason, the final pHs of each wine were determined and listed in the following tasting notes.

As a result of these Cabernet Sauvignon experiments, Louis M. Martini Winery has dropped all of these vineyards, currently using Cabernet grapes from different vineyards in the Alexander Valley area of Sonoma County and vineyards within the Calistoga-Yountville area of Napa Valley. Martini Winery plans to continue releasing 10-12 different Cabernets, including select vineyards, Northern California and their Special Selection.

TASTING REPORT

1978 Louis M. Martini Cabernet Sauvignon Experimental Vineyard Appellation Series

A. Santa Maria/Santa Barbara County 'Tepusquet'
Harvest: 23.6° Brix, 0.7 TA, 3.3 pH
Final pH: 3.6
Color: light ruby red, slight orange.
Aroma: lightly vegetal, bell pepper, delicate earthy nose, green olive, tobacco undertones.
Flavor: strong bell pepper, spicey, light fruit, slightly astringent, tart, vegetal, good acidity.
Balance and Finish: thin, medium body, little tannin, slightly hot, tart finish.

B. Paso Robles/San Luis Obispo Co. 'Rancho Tierra Rejada'
Harvest: 22.6 Brix, 0.84 TA, 3.5 pH
Final pH: 3.8
Color: light-medium red, clear, slightly orange.
Aroma: low varietal character, cherry-berry, green, slight vegetal, smokey accents, herbaceous, unpleasant off-odor.
Flavor: tart, thin, lacks varietal character, subdued, slightly sour, good acidity.
Balance and Finish: creamy body, medium light, thin, little tannin, fruity finish, sharp finish.

C. Santa Ynez Valley/Santa Barbara Co. 'Foxen Canyon'
Harvest: 24.0 Brix, 0.85 TA, 3.4 pH
Final pH: 3.8
Color: deep brick red, clear.
Aroma: black currant, mint cheese/lactic smell. Pinot Noir characteristics-perfume, herbaceousness, slight char, sweet nose, ripe strawberry, slightly vegetal.
Flavor: clean, fresh simple fruit. good acid, sweet taste, smooth, slightly bitter, light varietal flavors.
Balance and Finish: medium body and structure, a burnt, smokey finish. slightly tannic.

D. California Cabernet Sauvignon (a blend of the five vineyards)
Final pH: 3.6
Color: ruby, medium light, brick-brown red.
Aroma: fruity, moldy, musty, wet wood, slight malolactic aroma, butyric overtone, mint, menthol, eucalyptus, low varietal aroma.
Flavor: light mint, true varietal flavors, good acid-fruit balance, smooth, Bordeaux-like taste.
Balance and Finish: firm acid balance, fruity finish, some tannin. decently structured, slightly unpleasant aftertaste.

E. Monterey Co. 'International'
Harvest: 22.8 Brix, 0.78 TA, 3.3 pH
Final pH: 3.6
Color: purple, medium red.
Aroma: layered in herbs, fruit fades with airing. complex ripe fruit, slightly floral, minty, earthy, green olive.
Flavor: forceful, spicey, slightly bitter. soft, round fruit. lacks depth. mushrooms, smoked taste. pleasantly low in acid, mildly flavored.
Balance and Finish: full in the mouth, good acid balance, slightly tannic. soft, long, spicey finish.

F. Napa Valley, Carneros region 'La Loma'
Harvest: 23.3 Brix, 0.69 TA, 3.2 pH
Final pH: 3.4
Color: dark, purple-red, clear.
Aroma: earthy, dusty, mushrooms. rich fruit, cigar box, tarry, minty. slight cabbage-beet smell. off bacterial aroma-dirty, rubber. beefy, delicatessen smells, slight malolactic aroma.
Flavor: ripe fruit, deep complex flavors. vapid, little fruit, simple, aged character.
Balance and Finish: firmly structured. medium body. moderate tannin. nicely balanced, long finish.

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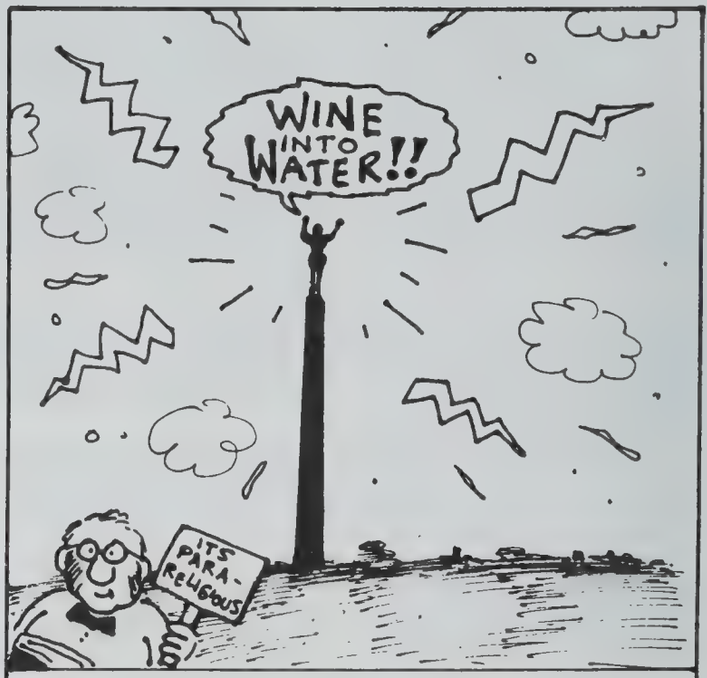

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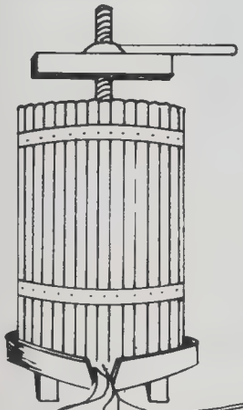

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BARRELS and WINE

By DENIS KELLY

For years, winemakers in the United States have been hearing stories about how used barrels move around between French producers. A premier cru chateau will buy new barrels, use them for two years or so and then sell them off to the fifth growth chateau down the road.

After a few more years, the barrel, like a slightly aged, but still attractive demi-mondaine, gets passed on again, this time perhaps to a cru bourgeois or a chateau across the river in the Blayais or even (shudder) up into Cahors or the far reaches of Roussillon.

After a few more years of use, exhausted now and far beyond its prime, our long suffering fut is sold to a shipper on the Quai de Chartrons and ends up filled with plonk destined for the 'colonial' market.

It sounds almost like a late 19th century epistolary novel, complete with moral about the transitory nature of beauty or even more like an Abolitionist tract about a particularly disreputable set of plantation owners.

But not to despair. This passing on of good French oak barrels makes very good sense both from a winemaking and an economic point of view (sometimes it's hard to see the difference).

The French (always the thriftiest of peoples as anyone who has spent time among them can testify) have worked out a pretty neat system for passing on and sharing the cost of small oak cooperage.

California winemakers are starting to wake up to the real advantages of used premium oak barrels.

Notice the word **premium** here. There have always been used barrels available in the California wine industry. Wineries have always wanted to sell off faulty barrels or those whose oak flavors have been leached out long ago.

Of course, the ubiquitous used whiskey barrel shipped out by the carload from Bourbon country has always been with us and probably always will.

But with the tremendous interest in small oak barrels, both French and American, and the use of the barrel as a major element in the style of many wineries, a trade has arisen in first rate barrels (usually French) that still have plenty of life left in them and are not 'problem' barrels.

Many of the larger 'chateau' style wineries are routinely bringing in large quantities of new French barrels every year and selling off barrels after about two years of use.

Mel Knox, a barrel broker who specializes in French oak, both new and used, sees this trade as very positive for the industry. Knox says, "The ability of a winemaker, especially at a new small winery, to purchase premium French oak barrels that have had a few years of use is a real advantage. He can then put together just the mix of older and newer barrels he wants for his style of wine and save money too."

A winemaker can thus avoid one of the problems associated with new oak—overoaking. With a mixture of new and used barrels, the winemaker can, Knox feels, acheive the correct balance of oak levels in the final assemblage and establish a style that can be consistent from the first vintage. Once a mix is arrived at, a regime of barrel rotation and replacement can assure continuation of the style.

Knox, who represents Taransaud of Cognac and Francois Freres of Burgundy, usually pre-sells used barrels for clients who bought them from him new. .

"What I like to do," describes Knox, "is sell the barrels while they still are filled with wine. This way, the buyer can come and take a look at the barrel, taste a sample of the wine and have it analyzed for any bacterial problems before he buys. This way, he knows he is getting a perfectly sound barrel and doesn't have to worry about any contamination.

"Some people are concerned about Brettanomyces from used cooperage and even though I've been hearing lately that this is not so much of a social disease as some maintain, the barrel can be certified sound before it leaves the winery. We just empty the barrel, rinse and sulfur it, and deliver it post haste to the buyer."

A good example of the advantages to wineries of the trade in premium used barrels is Acacia Winery. At Acacia, white barrels are used for one year and red barrels for two. They are then sold to other wineries. Acacia can then replace the barrels with new ones to maintain their style and recover some of the costs of new cooperage.

Prices average about 75% of replacement value for one year old white barrels without secondary fermentation (malolactic) and about 40% for reds with secondary fermentation.

Bob Roudon of Roudon-Smith was one of many winemakers who has bought barrels from Acacia. Roudon comments, "The barrels are working out very well. We don't want a lot of oak in our wines and yet we like to leave the whites in from crush to crush: about 10 months. The used

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barrels fit very well into our style.

"We have quite a mixture of barrels, some new, some used and this mix helps us to get just the type of oak character we want. Of course, you have to be careful who you buy the barrels from. You want to make sure the barrels don't have any undesirable bugs in them.

"I wouldn't buy a used barrel from just anyone, but if you are careful and get sound barrels with some oak left in them, they can be a real asset."

Jordan Winery went into barrels in a big way. From the start, they saw the advantages of a mix of new and used barrels and the winery bought many used barrels from Chateau Lafite along with new barrels when they began operations.

Jordan has had good success in establishing a style from the very beginning and the subtle use of oak in Jordan Cabernets owes much to the judicious balancing of old and new wood. Over the past few years, they have been selling the Lafite barrels and replacing them with new barrels to maintain the balance of old to new cooperage.

One of the purchasers of Jordan's used Lafitte barrels is Dave Cordtz of Cordtz Brothers Winery in Cloverdale. Dave has bought over 300 Nevers Oak barrels that average three-four years of age from Jordan.

Cordtz is enthusiastic about the barrels and the use of good, used barrels in general.

"Most of our wines are kept in small oak rather than stainless or redwood tanks," says Cordtz. "I like to have barrels that are not going to punch a lot of oak too quickly into the wine. The barrels are used, but not used up, and we can keep wine in them safely for a good amount of time.

"The wine picks up a little oak and gains in complexity and subtlety. I like to let the wines settle out in the barrel and to give them a good amount of barrel ageing. Too much new oak would make us have to move the wine around too quickly which would be a problem from both a labor and a winemaking point of view. We are racking all the time and mixing in some used oak with new simply gives us more options."

I think this last statement sums it up! Availability of sound, usable French oak barrels provides California winemakers with yet another option. The 'Used, but not used up' barrel adds another shade to the palate of California wine.

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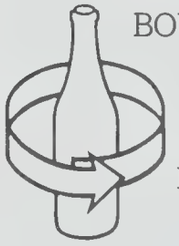

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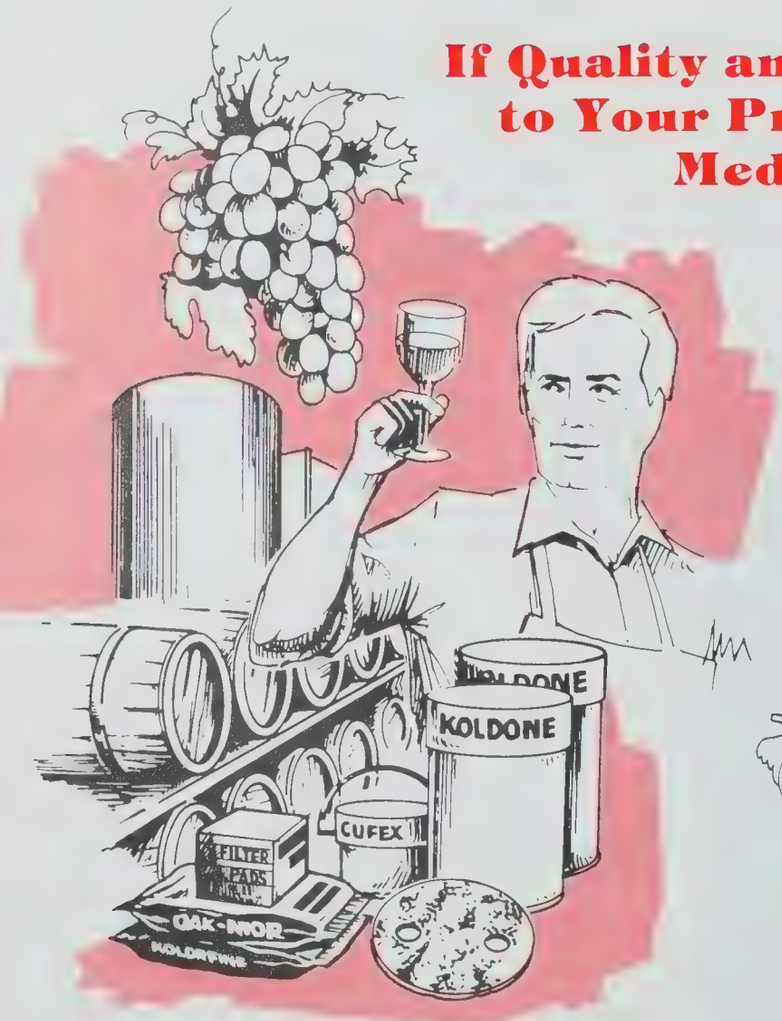

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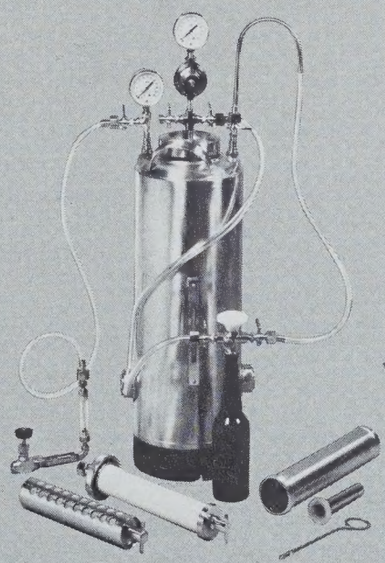

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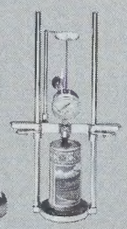

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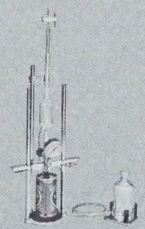

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